Calhoun: The NPS Institutional Archive

DSpace Repository

Theses and Dissertations 1. Thesis and Dissertation Collection, all items

1977-12

Evolution and implementation of Office of Management and Budget Circular A-109

Finch, Donald Leslie

Monterey, California. Naval Postgraduate School

http://hdl.handle.net/10945/18117

This publication is a work of the U.S. Government as defined in Title 17, United States Code, Section 101. Copyright protection is not available for this work in the United States.

Downloaded from NPS Archive: Calhoun

Calhoun is the Naval Postgraduate School's public access digital repository for research materials and institutional publications created by the NPS community. Calhoun is named for Professor of Mathematics Guy K. Calhoun, NPS's first appointed -- and published -- scholarly author.

Dudley Knox Library / Naval Postgraduate School
411 Dyer Road / 1 University Circle
Monterey, California USA 93943

http://www.nps.edu/library

EVOLUTION AND IMPLEMENTATION OF OFFICE OF MANAGEMENT AND BUDGET CIRCULAR A-109.

Donald Leslie Finch

NAVAL POSTGRADUATE SCHOOL

Monterey, California

THESIS

EVOLUTION AND IMPLEMENTATION OF OFFICE OF MANAGEMENT AND BUDGET CIRCULAR A-109

by

Donald Leslie Finch

December 1977

Thesis Advisor: M. B. Kline

Approved for public release; distribution unlimited.

T181726

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Evolution and Implementation of Office of Management and Budget Circular A-109		5. TYPE OF REPORT & PERIOD COVERED Master's Thesis; December 1977
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Donald Leslie Finch		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		12. REPORT DATE December 1977
		13. NUMBER OF PAGES 229
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Naval Postgraduate School Monterey, California 93940		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

OMB Circular A-109; Major System Acquisition; Commission on Government Procurement; Office of Federal Procurement Policy; Mission Needs; Mission Element Need Statement; Defense Acquisition Executive; Acquisition Life Cycle; Program/Project Management; Shipboard Intermediate Range Combat System

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This thesis investigates the evolution and implementation of Office of Management and Budget Circular A-109, "Major System Acquisition." The presentation begins with background material illustrating the evolution of acquisition principles incorporated in Circular A-109, particularly the recommendations contained in the Commission on Government Procurement. The policies of Circular A-109 to be

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE
(Page 1) S/N 0102-014-6601

followed by executive branch agencies in the acquisition of Major Systems are analyzed in detail as to content and interpretation.

Three areas of major change to the Department of Defense and the Department of the Navy acquisition policies and procedures as a result of the implementation of Circular A-109 are presented. The Navy's Shipboard Intermediate Range Combat System Program is examined as one of the first full-scale attempts to implement the Circular A-109 policies. Lessons learned from the initial implementation of Circular A-109 are described in the form of improvements to Major System Acquisition.

Approved for public release; distribution unlimited.

Evolution and Implementation of Office of Management and Budget Circular A-109

by

Donald Leslie Finch
Lieutenant Commander, United States Navy
B.S.E.E., Purdue University, 1965
M.S.A.E., Naval Postgraduate School, 1977

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
December 1977

Thesis
F4324
c.1

ABSTRACT

This thesis investigates the evolution and implementation of Office of Management and Budget Circular A-109, "Major System Acquisition." The presentation begins with background material illustrating the evolution of acquisition principles incorporated in Circular A-109, particularly the recommendations contained in the Commission on Government Procurement. The policies of Circular A-109 to be followed by executive branch agencies in the acquisition of Major Systems are analyzed in detail as to content and interpretation.

Three areas of major change to the Department of Defense and the Department of the Navy acquisition policies and procedures as a result of the implementation of Circular A-109 are presented. The Navy's Shipboard Intermediate Range Combat System Program is examined as one of the first full-scale attempts to implement the Circular A-109 policies. Lessons learned from the initial implementation of Circular A-109 are described in the form of improvements to Major System Acquisition.

TABLE OF CONTENTS

I. INTRODUCTION - 14

  A. OVERVIEW - 14

  B. PURPOSE AND SCOPE - - - - - - - - - - - - - - 16

  C. CONTENT - 16

  D. METHOD OF RESEARCH - - - - - - - - - - - - - - 18

II. ENVIRONMENT PRIOR TO CIRCULAR A-109 - - - - - - - 21

  A. ECONOMIC ENVIRONMENT - - - - - - - - - - - - - 21

  B. ACQUISITION ENVIRONMENT - - - - - - - - - - - 24

  C. POLITICAL ENVIRONMENT - - - - - - - - - - - - 27

  D. COMMISSION ON GOVERNMENT PROCUREMENT - - - - 32

III. OFFICE OF MANAGEMENT AND BUDGET CIRCULAR A-109 - - - - - - - - - - - - - - - - - - - 39

  A. OFFICE OF FEDERAL PROCUREMENT POLICY - - - - 39

  B. CIRCULAR A-109 AND ITS IMPLEMENTATION GUIDE - - - - - - - - - - - - - 45

  C. BUDGET EXECUTION AND EXPENDITURE CONTROL - 68

  D. POTENTIAL PROBLEM AREAS FOR CIRCULAR A-109 - - - - - - - - - - - - - - - - - 77

IV. DEPARTMENT OF DEFENSE IMPLEMENTATION OF CIRCULAR A-109 - - - - - - - - - - - - - - - - - 84

  A. KEY PERSONNEL AND POLICY DOCUMENTS - - - - - 84

  B. CHANGES TO THE DEPARTMENT OF DEFENSE ACQUISITION POLICIES AND PROCEDURES - - - - 87

    1. New Organizational Positions and Roles - - - - - - - - - - - - - - - - - 88

    2. Restructuring of the Front-End Process - - - - - - - - - - - - - - - - - - - 93

3. Decentralization - - - - - - - - - - - - - - 100

C. STATUS OF IMPLEMENTATION - - - - - - - - - - - 104

V. DEPARTMENT OF THE NAVY IMPLEMENTATION OF CIRCULAR A-109 - - - - - - - - - - - - - - - - - - 107

A. ORGANIZATION STRUCTURE FOR ACQUISITION - - - - - - - - - - - - - - - - - 107

B. ANTICIPATED CHANGES TO DEPARTMENT OF THE NAVY ACQUISITION POLICY AND PROCEDURE - 109

1. Organizational Positions and Roles - - - 109

2. Restructuring of the Front-End Process - - - - - - - - - - - - - - - - - - 111

3. Decentralization - - - - - - - - - - - - - - 114

C. INCORPORATION OF CHANGES - - - - - - - - - - - 114

VI. PROGRAM IMPLEMENTATION OF CIRCULAR A-109 - - - - 118

A. SIRCS PROGRAM OVERVIEW - - - - - - - - - - - - 118

B. SIRCS PROGRAM EVOLUTION - - - - - - - - - - - 121

1. Initiation - - - - - - - - - - - - - - - - - 121

2. Project Office - - - - - - - - - - - - - - - 122

3. Operational Requirement - - - - - - - - - 124

4. Acquisition Strategy - - - - - - - - - - - 125

5. Conceptual Phase Activities - - - - - - - 127

C. SIRCS PROGRAM PLANNING FOR FUTURE PHASE - - 141

1. Demonstration and Validation Phase - - - 141

2. Full Scale Development Phase - - - - - - - 143

D. LESSONS LEARNED - - - - - - - - - - - - - - - - 144

1. Critical Requirements for a Competitive Concept Formulation - - - - 144

2. Budgetary Perturbations - - - - - - - - - 146

3. Other Problem Areas - - - - - - - - - - - - 150

E. STATUS OF IMPLEMENTATION - - - - - - - - - - - 152

VII. CONCLUSIONS AND RECOMMENDATIONS - - - - - - - - - 156

A. SUMMARY - - - - - - - - - - - - - - - - - - - 156

B. FINAL REFLECTIONS - - - - - - - - - - - - - - - 159

APPENDIX A: List of Data Resources - - - - - - - - - - 162

APPENDIX B: Chronology - - - - - - - - - - - - - - - - 164

APPENDIX C: Summary Chart of Management Studies - - - 168

APPENDIX D: COGP Members and Staff - - - - - - - - - - 169

APPENDIX E: List of COGP Recommendations - - - - - - - 170

APPENDIX F: Overview of OFPP - - - - - - - - - - - - - 176

APPENDIX G: OMB Circular A-109 - - - - - - - - - - - - 177

APPENDIX H: Status of DOD Programs Implementation of Circular A-109 - - - - - - - 189

APPENDIX I: Outline of Mission Element Need Statement - - - - - - - - - - - - - - 196

APPENDIX J: Secretary of the Navy Support of Circular A-109 - - - - - - - - - - - - 199

APPENDIX K: SIRCS Government Laboratory Support - - - 201

APPENDIX L: SIRCS Contractors in Conceptual Phase - 204

APPENDIX M: SIRCS Government-Furnished Information - - - - - - - - - - - - - - - - 205

APPENDIX N: SIRCS Evaluation Criteria for Conceptual Phase - - - - - - - - - - - - - 206

APPENDIX O: SIRCS Validation Phase Technical Strategy - - - - - - - - - - - - 212

APPENDIX P: Congressional Action on SIRCS FY-78 Budget - - - - - - - - - - - - - - - 215

REFERENCES - 222

INITIAL DISTRIBUTION LIST - - - - - - - - - - - - - - 228

LIST OF FIGURES

1. The Federal Budget - - - - - - - - - - - - - - - - - - 23
2. Major System Acquisition-Recommended Actions - 37
3. Major System Acquisition Cycle - - - - - - - - - - 51
4. Exploration of Alternative Systems - - - - - - - - 58
5. Major System Acquisition Process - - - - - - - - - 63
6. The Development Process for a Major System - 65
7. A Mission Approach - - - - - - - - - - - - - - - - - - 75
8. Converting to a Mission Approach-Department of Defense - - - - - - - - - - - - - - - - 76
9. DOD Illustration of Mission Approach - - - - - - - 76
10. Organization Roles under A-109 - - - - - - - - - - 92
11. DOD Major System Acquisition Cycle - - - - - - - - 96
12. DOD Major System Acquisitions - - - - - - - - - - - 101
13. Navy Documentation and Review Procedure - - - - - - 117
14. Overview of SIRCS - - - - - - - - - - - - - - - - - - 120
15. SIRCS Project Office, PMS-404-40 - - - - - - - - - 123
16. SIRCS Concept Formulation Phase - - - - - - - - - - 129
17. Balancing Cost and Performance during Exploration of Alternatives (Concept) Phase - - - 136
18. Balancing Cost and Performance through System Design Iteration - - - - - - - - - - - - - - 138
19. SIRCS Evaluation Criteria for Validation Phase - - - - - - - - - - - - - - - - - - 140
20. SIRCS Schedule - 145

TABLE OF ACRONYMS AND ABBREVIATIONS

AAG	Acquisition Advisory Group
ADP	Automatic Data Processing
AFR	Air Force Regulation
AMARC	Army Material Acquisition Review Council
APL	Applied Physics Lab (Johns Hopkins University, MD)
AR	Army Regulation
ARC	Acquisition Review Committee
ASC	Advanced System Concept
ASCM	Advanced Anti-Ship Capable Missile
ASD	Assistant Secretary of Defense
ASPR	Armed Services Procurement Regulations
ASMD	Anti Ship Missile Defense
CDR	Concept Development Report
CEB	Chief of Naval Operations Executive Board
CIRCULAR A-109	Office of Management and Budget Circular A-109, "Major System Acquisitions"
CMC	Commandant of the Marine Corps
CNM	Chief of Naval Material
COGP	Commission on Government Procurement
CNO	Chief of Naval Operations
DAE	Defense Acquisition Executive
DCP	Decision Coordinating Paper
DDR&E	Director Defense Research and Engineering
DNSARC	Department of the Navy System Acquisition Review Council

DOD	Department of Defense
DP	Development Proposal
DSARC	Defense System Acquisition Review Council
DTC	Design to Cost
ECP	Engineering Change Proposal
FDYP	Five Year Defense Plan
FDS	Full Scale Development
FY	Fiscal Year
GAO	General Accounting Office
GFI	Government Furnished Information
HASC	House Armed Services Committee
HQMC	Headquarters, Marine Corps
HR	House Resolution
H Rept.	House Report
I & L	Installations and Logistics
IR&D	Independent Research and Development
LCC	Life Cycle Cost
LICGS	Lightweight Intermediate Caliber Gun System
MAB	Mission Area Budgeting
MENS	Mission Element Need Statement
NACOMPT	Navy Comptroller
MSA	Major System Acquisition
NADC	Naval Air Development Center
NAE	Navy Acquisition Executive
NAEI	Naval Air Executive Institute
NASA	National Aeronautics and Space Administration
NATO	North Atlantic Treaty Organization

NAVMAT	Office of Chief of Naval Material
NAVSEA	Naval Sea Systems Command
NAVY	Department of the Navy
NCAR	Navy Center for Acquisition Research
NCMA	National Contract Management Association
NDCP	Navy Decision Coordinating Paper
DMARC	Navy Material Acquisition Review Council
NRDC	Navy Research Development Center
NMC	Naval Material Command
NOSC	Naval Ocean Systems Command (San Diego, CA)
NRL	Naval Research Lab (Washington, DC)
NSWC	Naval Surface Warfare Center (Dahlgren, VA)
NWC	Naval Weapons Center (China Lake, CA)
OFPP	Office of Federal Procurement Policy
OJCS	Office of Joint Chiefs of Staff
OMB	Office of Management and Budget
OPNAV	Office of Chief of Naval Operations
OR	Operational Requirement
OSD	Office of Secretary of Defense
OSN	Office of Secretary of the Navy
PL	Public Law
PMS	Project Manager, NAVSEA
POM	Program Objectives Memorandum
PPBS	Planning, Programming and Budgeting System
RCA	Radio Corporation of America
R&D	Research and Development
RDT&E	Research, Development, Test and Evaluation

REF	Reference
RFP	Request for Proposal
RIW	Reliability Improvement Warranty
S	Senate Resolution
SAC	Senate Appropriations Committee
SAIP	Ship Acquisition and Improvement Panel
SECDEF	Secretary of Defense
SECNAV	Secretary of the Navy
SECNAVINST	Secretary of the Navy Instruction
SIRCS	Shipboard Intermediate Range Combat System
SPO	Systems Project Office (Air Force)
SSA	Social Security Administration/Source Selection Authority
(S)SARC	(Service) System Acquisition Review Council
SSEB	Source Selection Evaluation Board
STAT	Statute (Law)
STO	Science and Technology Objective
T&E	Test and Evaluation
TPAB	Technical Planning and Advisory Board
VSTOL	Vertical/Short-Field Take-Off/Landing
ZBB	Zero Base Budgeting

ACKNOWLEDGEMENTS

The author wishes to express his appreciation to Professor Melvin B. Kline and Commander Allen C. Crosby of the Naval Postgraduate School for their comments and suggestions as advisor and second reader to the author in the development of this thesis.

The author wishes to acknowledge the assistance and encouragement provided by Mr. Fred H. Dietrich and Mr. William N. Hunter of the Office of Federal Procurement Policy.

The author wishes to express his gratitude to the members of the SIRCS Project Office - Commander Scott Mobley, Mr. Vince Juric, Commander Jerry Dunn and Lieutenant Commander William Musgrave - for their unqualified support in the compilation of research data.

Lastly, the author would like to express his special thanks to his wife, Jonnie, for her diligent effort in the typing of thesis drafts but more importantly, for her patience and understanding during the writing of this thesis.

I. INTRODUCTION

A. OVERVIEW

For two decades prior to the issuance in April 1976 of Office of Management and Budget Circular A-109, (Circular A-109), titled, "Major Systems Acquisition" [Ref. 1], reforms to reduce cost overruns and to diminish the controversy over Federal Government resource allocation were called for from both public and private sectors. Finally, in November 1969, the Commission on Government Procurement (COGP) was created by Congress to study and recommend to Congress methods "to promote the economy, efficiency and effectiveness of Federal procurement by the Executive Branch of the Federal Government" [Ref. 2]. After three years of investigation and analysis, COGP issued a five volume report setting in motion profound and needed change to government procurement processes.

As a result of one of the recommendations of the COGP, the Office of Federal Procurement Policy (OFPP) was established within the Office of Management and Budget (OMB). OFPP is charged with establishing procurement policies across all executive branch agencies of the Federal Government. One of the first outputs of OFPP was Circular A-109 in April 1976, culminating nearly a two-year joint Administration and Congressional effort to establish policy guidelines applicable to all Federal Agencies engaged in developing major systems.

Circular A-109 is a landmark document which adds several new dimensions to the business of defining and funding major systems in the fulfillment of basic agency roles and missions. Circular A-109 provides guidance for the establishment of a common framework for acquisition policy formulation and program implementation to all Executive Agencies. The COGP recommendations concerning major system acquisition which are incorporated in Circular A-109 are not basically new or startling. What is different in Circular A-109 is the integrated framework which unifies the formulation of needs with program implementation and the direction of Agency mission needs and goals.

The Department of Defense (DOD) has been designated as the lead Executive Agency to implement Circular A-109 [Ref. 3]. DOD has responded with revisions to its major system acquisition directives, resulting in major policy changes.

The three service components of DOD are in the process of revising the individual directives and instructions to comply with these new DOD directives. Several DOD programs in the early formulation and development phases are already implementing the new A-109 acquisition policies. A Navy project, the Shipboard Intermediate Range Combat System (SIRCS), initiated in May 1975, was directed by the Secretary of the Navy (SECNAV) in December 1975 to implement COGP recommendations.

Thus, SIRCS was already following an acquisition strategy that was consistent with the policy guidance of Circular A-109 at time of its introduction in April 1976.

B. PURPOSE AND SCOPE

The purpose of this thesis is to investigate the evolution and implementation of OMB Circular A-109. The presentation of this thesis begins with background material illustrating the evolution of acquisition principles incorporated in Circular A-109. Next, Circular A-109 is analyzed in detail as to content and interpretation. Department of Defense and Department of the Navy implementation of Circular A-109 is investigated. Then, a Department of the Navy program, the Shipboard Intermediate Range Combat System, is examined as one of the first full-scale attempts to implement the Circular A-109 policies. Finally, some general conclusions in the form of lessons learned regarding Circular A-109 implementation are presented.

C. CONTENT

In the Section II, the economic rationale of government resource allocation leading to the issuance of Circular A-109 is covered along with a brief history of major system acquisition. The Congressional mandates for procurement reforms leading to the establishment of the Commission on Government Procurement and the Executive Branch implementation of these reforms through the Office of Federal Procurement Policy are analyzed. This section also examines the Commission on Government Procurement. Of the 147 COGP recommendations, the 12 recommendations involving major system acquisition which led to the establishment of OFPP and the issuance of Circular A-109 are also examined.

In Section III a detailed analysis of the actual content of Circular A-109 is presented. OFPP Pamphlet No. 1 [Ref. 4] is used to illustrate executive agency implementation. Circular A-109 and its relationships with the Congressional Budget and Impoundment Act of 1974, mission area budgeting and zero-based budgeting are analyzed. Finally, this section presents some inherent problems associated with the implementation of Circular A-109.

In Section IV, the recently revised Department of Defense Directives 5000.1, 5000.2 and 5000.30 [Refs. 5, 6, 7] issued in compliance with Circular A-109, are examined. The principal changes to the DOD major system acquisition process are analyzed, in particular, the changes to the front-end of the system acquisition life cycle. In addition, principal changes to DOD organization; the recently created Office of Secretary of Defense (OSD) billet, Defense Acquisition Executive, and the decentralization in decision making are discussed. DOD's submission of its implementation plan to Office of Management and Budget (OMB) is covered. The DOD components preparation of internal policies and procedures as well as DOD's Mission Element Need Statement (MENS) and Milestone 0 procedures are investigated. Finally, in this section, Congressional interest in DOD implementation is explored.

In Section VI, the SIRCS program is introduced as one of the first DOD programs to implement Circular A-109, and the SIRCS acquisition strategy and structure is examined. The evolution of the SIRCS program is presented, first under the

COGP recommendations, and subsequently also under Circular A-109 directives to present date, highlighting both legislative and DOD influences. The continued operation of the SIRCS program under Circular A-109 directives for the forthcoming Validation and Full Scale Development Phases of the life cycle is postulated. This section also compares the applicable COGP recommendations and the SIRCS program acquisition strategy. The section concludes with an investigation of some of the inherent implementation problems of Circular A-109 incurred by the SIRCS program and with a discussion of the critical requirements involved in the competitive concept formulation currently being conducted by the SIRCS program.

In Section VII, the constructive improvements of Circular A-109 in major system acquisition strategy and the advantages of Circular A-109 principles applied to future program management is discussed.

D. METHOD OF RESEARCH

Because the issuance of Circular A-109 and the resulting revision of DOD Directives incorporating Circular A-109 have only recently occurred, little documentation pertaining to DOD and Navy implementation was available as research material for this thesis. As a result, emphasis in data gathering in this area was placed on personal interviews and discussions with various participants knowledgeable in Circular A-109 and its implementation and on attendance at various conferences and seminars at which new developments in federal acquisition policy were discussed.

One of the major inputs into the thesis came from two weeks of intensive interviews in the Washington, D.C. area in June and September 1977. These interviews were held with people who were intimately involved in implementing Circular A-109 policies. The sessions ranged from 30 minutes to three hours with some interviewees being revisited for additional detail and update on the evolving implementation. Interviews were conducted with particular emphasis given to the Office of Federal Procurement Policy, Office of Deputy Director for Research and Engineering, Department of Defense; Deputy Chief of Naval Operations for Air, OP-05; Naval Material Command; Office of Commander, Naval Air Systems Command, and the Shipboard Intermediate Range Combat System, PMS-404-40. A listing of persons and organizations interviewed is given in Appendix A.

A second major input into this thesis came from several conferences, meetings and seminars on new developments in federal procurement policy attended by the author. The majority of the conferences and seminars were sponsored by the National Contract Management Association (NCMA) and by the Naval Air Executive Institute (NAEI).

Data concerning Circular A-109 and its implementation by DOD and the Navy were collected by three means. First, formal, prepared presentations by the attendees were taped and transcribed by the author. Second, informal smaller study groups were attended. Third, personal interviews were conducted, separately, with key personnel to obtain each participant's impressions and viewpoints on Circular A-109 and

its implementation. Those attending these conferences and seminars included key personnel from the Office of Federal Procurement Policy, Department of Defense, Navy Program Managers, as well as several key civilian personnel from the major DOD-contract corporations. A listing of participants and organizations represented at these conferences is given in Appendix A.

Although limited, a literature search was conducted into publications pertaining to Circular A-109 and its implementation. While there is reference to Circular A-109 in OFPP and DOD directives and documents and in General Accounting Office (GAO) reports, there is very little reference to Circular A-109 implementation in other documents, public or private. There have been some recent magazine articles, most notably in The Government Executive, regarding Circular A-109. All of this is said to encourage future research in this area as publications and documentation begin to appear in this important area of federal acquisition policy.

II. ENVIRONMENT PRIOR TO CIRCULAR A-109

In this section, the economic rationale of government resource allocation leading to the issuance of Circular A-109 is covered along with a brief history of major system acquisition. The executive and legislative branch interactions involving procurement reforms leading to the establishment of the Commission on Government Procurement are analyzed. This section concludes by examining the Commission on Government Procurement and 12 of its recommendations involving major system acquisitions which led to the establishment of OFPP and the issuance of Circular A-109.

A. ECONOMIC ENVIRONMENT

In recent years, federal, state and local expenditures in the United States have accounted for about 30% of the annual gross national product. Slightly over two-thirds of this amount has been for "exhaustive" public expenditures. These expenditures are for goods and services whose production generates benefits that are consumed by most households. Indeed, each member's consumption of a public good does not reduce the consumption available to other members. In the case of national defense, marginal social benefits are the sum of the marginal private benefits [Ref. 8].

National security economics is concerned with choosing economic policy and techniques to allocate resources most efficiently. National security (an economic view) depends

on: (1) the quantity of national resources at a given time and threat level; (2) the proportion of these resources dedicated to defense purposes; and (3) the efficiency of allocation of these defense resources [Ref. 9].

The executive branch dominates the defense economics and policy-making system. Congress processes structural issues while the executive branch processes strategic issues. When Congress does act on defense issues, it tends to support increases in defense programs as proposed by the executive branch [Ref. 10]. The executive branch has the power to set policy and budgets to implement programs to achieve the desired strategic posture.

The broad issue of budget "controllability" is of utmost concern to the President and the Congress. The federal budget is in a dilemma for the next few years; that is, it is difficult to cut and control through appropriation bills (see Figure 1).

Even the so-called "controllable" defense spending is, in reality, beyond the reach of the annual budget cutters. Who would cut the military payroll in half? Who would stop all federal aid to education?

The 1974 Congressional Budget and Impoundment Act (88 STAT 297) makes it difficult to enact spending programs that are exempt from the controls of its appropriation process, and it requires Congress to consider the consequences over five years of every spending action it takes [Ref. 11].

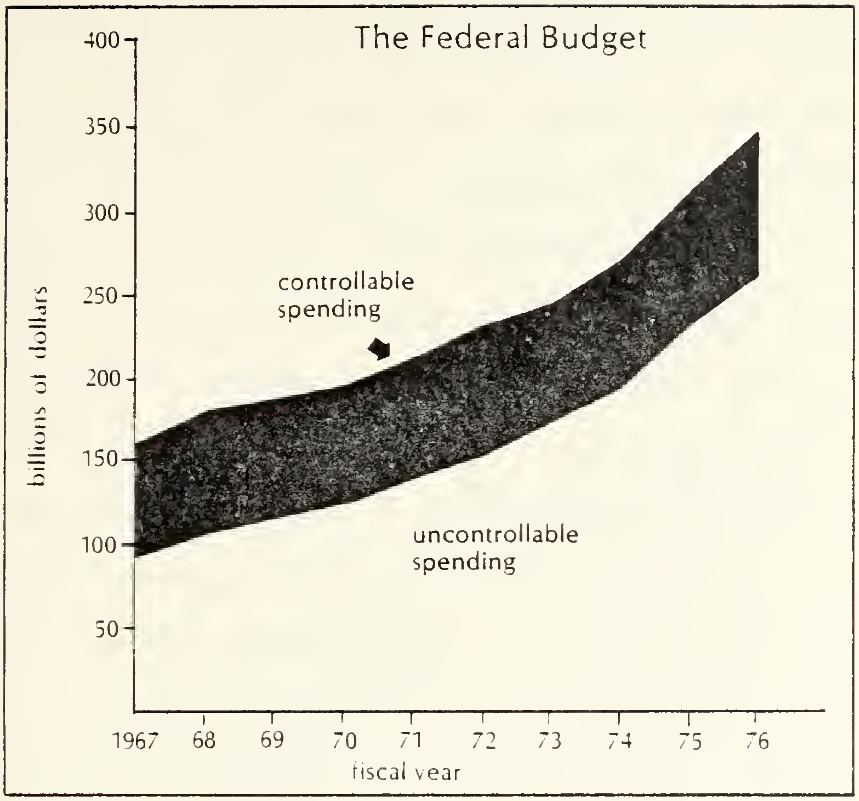


FIGURE 1

On August 28, 1977, President Carter projected a 3% per year growth, (above inflation and adjustments), of the defense budget for the next four years. Taking the FY 1978 budget as a base at 109 billion dollars and compounding at 3% growth and 3% inflation, Table I shows projected defense budgets.

TABLE I

PROJECTED DEFENSE BUDGETS 1978-1982	
1978 (BASE)	109 BILLION
1979	115.5
1980	122.4
1981	129.7
1982	137.5

Until recently, defense budgets have been essentially dollar constant, actually losing spending power when accounting for inflation. Concern is growing that the Soviets are considering a massive first strike against the U.S. This could lead to a condition where increased defense spending is acceptable to the masses and welcomed by both the President and Congress. When considering the controllable aspects of defense spending, there is a congressional (and possibly Presidential) desire to regain control of the budget by encouraging controllable budget increases while discouraging uncontrollable budget increases.

This thesis concentrates on recent economic acquisition policy changes for public goods resource allocation and the "potential" for widespread acceptance of these new economic tools. Specifically, Office of Management and Budget (OMB) Circular A-109, Major Systems Acquisition, is examined for future impact on how the U.S. federal agencies will acquire their "big ticket" items.

B. ACQUISITION ENVIRONMENT

During the 1950 cold war era, there was a perceived technology race against the Soviets. Acquisition strategy could be characterized by having performance and schedule as driving factors. There was little time for requirements definition of major systems. Concurrency in development and production was normal practice. Cost growth, poor performance, duplication of design and effort were prevalent among the services. These problems and many others were detailed by early analysis [Ref. 12].

Major system acquisition strategy was sought and resulted in a revision to DOD Directive 3200.9 (1965) [Ref. 13] and was a major policy guidance directive issued on Concept Formulation and Contract Definition by Secretary of Defense McNamara. This was the first "building block" in the establishment of a coordinate framework of policy formulation and implementation for DOD system acquisition. Policy formulation and decision making shifted from the services to the highest levels of DOD. This process eventually led to a formalized decision-making body which is known today as Defense System Acquisition Review Council (DSARC).

This directive attempted to establish a logical framework of decision making for major DOD program implementation. Reliance on contracting was used as a primary instrument for preventing cost overruns. Contract definition and total package procurement using fixed price contracts, produced an overly rigid Office of Secretary of Defense (OSD) control of the acquisition process that resulted in the procurement disasters such as buy-ins, bail-outs, (F-111, C-5A).

There was a flurry of government studies of the acquisition process during these times. The Blue Ribbon Defense Panel (1969-1970) [Ref. 14] noted three major deficiencies in requirements definition:

(1) The services were faulted for developing requirements that were too specific.

(2) The needs of the operating forces were being subordinated to the parochial interests within the services.

(3) The services were biased towards over-sophisticated weapon systems.

These requirements definition criticisms imply that the formulation of needs was still unstructured, uncoordinated and lacked control. The panel further criticized the lack of a meaningful program review after the initial OSD decision to proceed into Engineering Development, the over-optimism of contractors and services in dealing with technical unknowns, reliance on "paper studies" versus critical hardware experiments, and the inhibiting effects on innovation.

Upon change of Administration, Mr. David Packard, Deputy Secretary of Defense, issued policy guidance in 1970 that resulted in DOD Directive 5000.1 [Ref. 15] and formalized the DSARC process. The intent of this directive was to:

- -decentralize decision-making from OSD to the servive components.
- -define authority and responsibility for key organizations and individuals.
- -define OSD milestone decision points and substantiating elements.

Due to continuing procurement disasters, Congress commissioned (HR 474, PL 91-129) the Commission on Government Procurement (COGP) in 1969. Unlike most past commissions that were constrained to deal with segments of the acquisition process, the COGP looked at the entire Federal procurement process across all agencies. The Commission was tasked to investigate the following:

- -The re-evaluation and improvement of policies for the government to acquire goods and services in a timely, economical and competitive manner.
- -An improvement in procurement organization and personnel.

-The correction of duplication, or gaps in laws, regulations and directives.

-Uniformity and simplicity when appropriate.

-Fair dealings.

-Overall coordination of Federal procurement programs.

A more detailed look at the COGP and its recommendations pertaining to major system acquisition is presented later in this section.

Various service studies [Refs. 16, 17, 18] were conducted in 1974-1975 and re-emphasized the recommendations of the COGP report.

This brief history sets the stage for the discussion of Circular A-109 and its acquisition policy directives for federal agency major system acquisitions. A more detailed history of major system acquisition is given in Ref. 19. A chronology of events pertaining to this thesis is given in Appendix B. A summary chart of management studies is given in Appendix C.

C. POLITICAL ENVIRONMENT

The late sixties was an era of increasing awareness in Congress of the costliness of many government programs and of the dangers of ineffective or inefficient management. Mr. Gordon Rule, Division of Procurement Control, Naval Material Command, and Mr. A. E. Fitzgerald, Deputy for Management Systems, Office of Secretary of the Air Force, were being heard by Congress. Their allegations and warnings were recognized. Congress was concerned with the increasingly complex job of controlling procurement expenditures. The

evolution of this concern into the specific acquisition policy promulgated in Office of Management and Budget Circular A-109 will be traced.

Representative Chet Holifield (D. Calif.), describing the early Congressional reaction to the concern said [Ref. 21]:

> "...my subcommittee suggested in March 1966, that the Bureau of the Budget study the idea of a Presidentially-appointed board "to consider the direction and the effects of procurement policies and government programs on a givernment-wide basis. When six months went by without any visible action by the Bureau of the Budget, ...I planned to go ahead and have Congress take the initiative in establishing a commission."

In 1967, Rep. Holifield introduced a bill (HR 12510) to create a Commission on Government Procurement. In November 1967, the House Committee on Government Operations reported the bill (H Rept 90-890). However, "...the Rules Committee deferred action on the bill in 1968, even though it had the support of the Johnson administration" [Ref. 20].

These early efforts at reforming the procurement process could not muster adequate Congressional support. "The committees conducting investigations, and particularly the Armed Services Committee, looked askance at the idea of a commission, believing it would deflect attention from their work or cause postponement of needed reforms" [Ref. 21]. In 1969, however, the tide changed and interest in procurement matters increased dramatically" [Ref. 20].

> "Several...committees and commissions...examined government procurement practices and related problems during 1969...The Joint Economic Subcommittee on

> Economy in Government, chaired by Senator Proxmire, ...examined "major instances of waste and inefficiency" in hearings on the military budget...A group of Democratic Members of Congress...conducted a Conference on the Military Budget and National Priorities...".

Other groups were actively pursuing similar topics in 1969; among them were the previously mentioned Blue Ribbon Defense Panel, the Packard Commission, and the National Goals Research Staff [Ref. 20]:

> "In the ninety-first Congress, the picture changed for several reasons," Rep. Holifield has said. "In the first place, we did a much more extensive job of identifying major problem areas and documenting support for the commission. Secondly, the Armed Services Committee withdrew its opposition in the face of the evident need for a serious study of government procurement. Thirdly, and perhaps most important of all, members of Congress, whether supporters or critics of the military establishment, wanted constructive action."

In January 1969, Rep. Holifield and others introduced HR 474 to establish the Commission on Government Procurement. In the period March-May, hearings were held before the Military Operations Subcommittee of the Committee on Government Operations which Rep. Holifield chaired. In early August, the full Committee reported the bill. On September 23, the House passed the bill and sent it to the Senate. A proposed amendment to require bipartisan appointments to the Commission was rejected [Ref. 20].

On September 24, the Senate Committee on Government Operations reported S 1707 to establish a commission on government purchasing. This bill was similar to HR 474. On September 26, the Senate passed HR 474 after substituting the provisions of S 1707. The conference committee reported (H Rept 91-613), a bill that was essentially a series of

compromises between HR 474 and S 1707 (Congressional appointments would be on a bipartisan basis). During November, both the House and the Senate agreed to the conference report, and the President signed it into law (PL 91-129) [Ref. 20].

The purpose of the commission was to undertake a comprehensive and detailed study of government procurement and to report its findings and recommendations to the Congress within two years. Its recommendations were to be developed toward reforming regulations, eliminating waste, duplication and inefficiency and reducing costs. The commission was empowered to issue subpoenas, and it was given an open-ended authorization for whatever funds were required for its operations (H Rept 91-613).

In early 1971 it became evident that the Commission would not be able to meet its reporting deadline. This was caused, in part, by a five month delay in appointing a full complement of commission members and by the reluctance of industry to release high-ranking personnel for commission work [Ref. 22]. Consequently, the reporting deadline was extended to December 1972 (HR 4848, PL 92-47). Rep. Holifield, who introduced the bill, is quoted as saying [Ref. 21]:

> "We would have made it a straight 12-month extension but then that report would have been brought out just before the election and there would have been a lot of charges of partisan politics. So far, in this work, there has not been one degree of partisanship...And we felt to bring out the report right before the 1972 Presidential election, it would either be buried insofar as attention is concerned, or it would be called partisan by one side or the other."

Meanwhile, an event which was later to become relevant was taking place, the Office of Management and Budget was established.

On April 5, 1970, President Nixon appointed the Presidential Advisory Council on Executive Reorganization. Mr. Roy L. Ash, recently president of Litton Industries, was appointed to the chairmanship. "Of all the areas suggested for study..the council concluded that the 31-year old Executive Office of the President was most in need of reorganization," Ash said [Ref. 23]. Subsequently, President Nixon proposed to divide the Executive Office of the President into two branches: The Office of Management and Budget (OMB) and the Domestic Council. OMB would be built around the nucleus of the then existing Bureau of the Budget (which would be abolished) and would carry on and expand the Bureau's functions. It would create a greater executive capability for analyzing, coordinating, evaluating, and improving the effectiveness of government programs. It would pick up, to some extent, where the programming, planning and budgeting system left off. The Domestic Council would advise the President on programs and policies outside the military and foreign affairs areas [Ref. 23].

A resolution disapproving the reorganization was reported by the House Committee on Government Operations. Its key objections were the transference of Bureau of Budget statutory responsibility to the Presidnet and the absence of a requirement for Senate confirmation of the new Directors. A coalition of Republicans and Southern Democrats defeated the

resolution. No resolution of disapproval was introduced in the Senate. The reorganization plan went into effect in mid-May because Congress failed to disapprove it within the 60 day period allowed by the Reorganization Act of 1949 [Ref. 23].

On December 31, 1972, the Commission submitted its final report to the Congress. It contained many fundamental recommendations for the reform of procurement policy.

A further discussion of Congressional interaction with the major system acquisition process is given in Refs. 24 and 25.

D. COMMISSION ON GOVERNMENT PROCUREMENT

As previously discussed, the Commission on Government Procurement was created by Public Law 91-129 in November 1969 after extensive Congressional hearings dealing with government acquisition problems. The COGP was charged by Congress to study and recommend methods "to promote the economy, efficiency and effectiveness" of procurement by the executive branch of the Federal Government. The COGP was to be a bipartisan, 12 member body, composed of Congressmen, Senators and representatives from the private sector and the government. A list of commission members along with the professional staffs is given in Appendix D.

The COGP's purpose was to accomplish four objectives in the overall goal of improving the acquisition process. These were [Ref. 2]:

-Establishing a common framework that highlights the key decisions for all involved organizations--Congress, agency heads, service components, and the private sector for the purpose of having a common set of procedures for initiating, conducting, and controlling programs.

-Defining the role each organization is to play in order to exercise its proper level of responsibility and control over acquisition programs.

-Giving visibility to Congress and agency heads to exercise their responsibilities by providing them with the information needed to make key program decisions and commitments.

-Improving the means for assuring public accountability as a substitute for the burden of present administrative reporting and surveillance procedures.

The COGP was given a broad charter by Congress to take an integrated view of the deficiencies in major system acquisition and identify the problems in program implementation. After two and one-half years of intensive study and over 150,000 pages of feeder reports submitted by working groups of the Commission, the COGP presented its report to Congress.

The major problems incurred in the acquisition of major systems investigated by the COGP are summarized in Column 1 of Table II. DOD's efforts to correct these problems are shown in Column 2. Column 3 highlights additional changes recommended by the COGP which not only support current DOD policy, but extend to the fundamentals of the acquisition process not previously addressed in DOD policy.

The COGP Report consisted of ten parts in four volumes [Ref. 2]:

Volume 1
    Part A. General Procurement Considerations

TABLE II

COMPARISON OF PAST PROBLEMS, CURRENT CHANGES, AND RECOMMENDED ACTIONS
(Department of Defense)

PAST PROBLEMS	MAJOR CURRENT CHANGES	MAJOR RECOMMENDED ACTIONS
ESTABLISHING NEEDS AND GOALS		
-Needs/goals set by each service; unplanned duplication	-Mission area coordinating papers	-Agency head reconciliation of needs/goals and service responsibilities
-No formal congressional overview		-Congressional review of mission deficiencies, needs/goals for new acquisition programs
EXPLORING ALTERNATIVE SYSTEMS		
-Centralized agency-level control over systems	-Decentralization; more authority for military services	
-Lack of congressional visibility; scattered R&D line items		-Congressional authorization and appropriation of RDT&E funds for systems candidates by mission need
-Premature commitment to single technical approach	-Attempt to broaden choice of system options at first agency-level review	-Solicit system proposals using borad need statement; maintain integrity of separate candidate systems

TABLE II (continued)

-Multiple information sources uncommitted industry proposals; pressures for gold-plating; high unit costs		-Annual review and fixed-level awards to each selected competitor; agency technical staff assistance
-Narrow technical latitude for competition; paper information; buy-ins	-Greater design latitude; more time for exploration and hardware development	-Commit best competitors to prototype system-level demonstration
CHOOSING PREFERRED SYSTEM		
-Paper competition; complicated source selection; contentious awards	-Some hardware prototypes; less reliance on paper	-Choose system based on missio- performance measurements, total ownership costs derived from competitive demonstration and operational tests
-Single contract covering both development and production	-No "total package" awards	
IMPLEMENTATION		
-Overlapped development and production ("concurrency")	-Reduced concurrency	-Independent operational test before full-production release; strengthened test organizations
-Late and inadequate operational tests for production decision	-Emphasis on early and better operational testing	

[Ref. 26]

Volume 2
    Part B. Acquisition of Research and Development
    Part C. Acquisition of Major Systems

Volume 3
    Part D. Acquisition of Commercial Products
    Part E. Acquisition of Construction and Architect-Engineer Services
    Part F. Federal Grant-type Assistance Programs

Volume 4
    Part G. Legal and Administrative Remedies
    Part H. Selected Issues of Liability; Government Property and Catastrophic Accidents
    Part I. Patents, Technical Data, and Copyrights
    Part J. Other Statutory Considerations

Of the 149 recommendations made by the COGP, 12 recommendations contained in Volume 2, Part C involved improvements to major system acquisitoin. A list of these 12 recommendations is given in Appendix E.

These recommendations indicate that a systems approach is needed to improve the major system acquisition process. The framework of this systems approach is presented in Figure 2, illustrating the four basic steps recommended by the COGP, namely:

1. Establishing needs and goals.
2. Exploring alternative systems.
3. Choosing preferred system.
4. Implementing final development, production, and use.

Each numbered section in the diagram correlates with the corresponding COGP recommendation in Appendix E.

The U. S. Senate Committee on Government Operations of the 94th Congress, created a Subcommittee on Federal spending Practices, Efficiency, and Open Government to provide a Senate focal point for the review of Federal spending

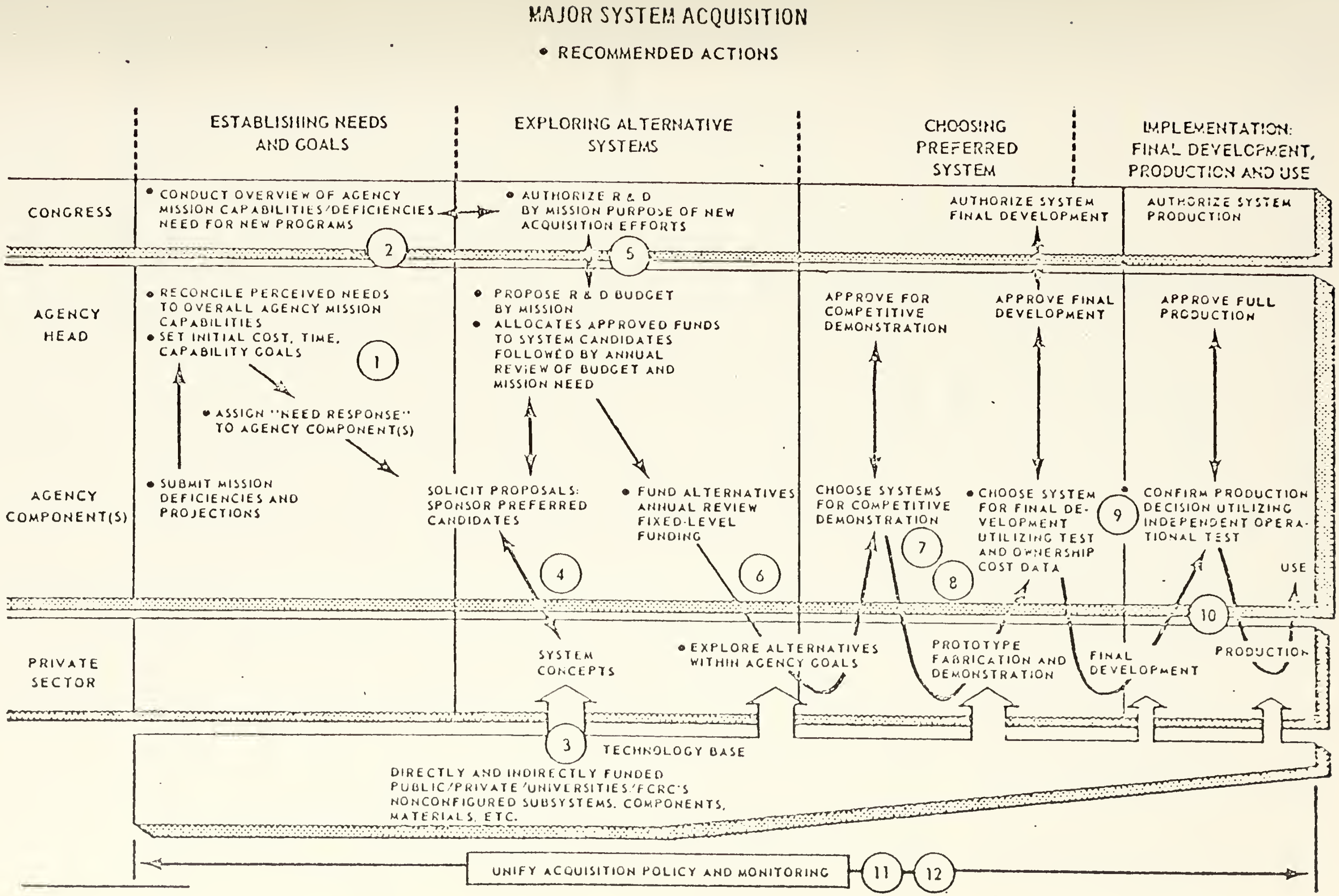

MAJOR SYSTEM ACQUISITION
• RECOMMENDED ACTIONS
ESTABLISHING NEEDS AND GOALS
EXPLORING ALTERNATIVE SYSTEMS
CHOOSING PREFERRED SYSTEM
IMPLEMENTATION: FINAL DEVELOPMENT, PRODUCTION AND USE
CONGRESS
AGENCY HEAD
AGENCY COMPONENT(S)
PRIVATE SECTOR
• CONDUCT OVERVIEW OF AGENCY MISSION CAPABILITIES/DEFICIENCIES NEED FOR NEW PROGRAMS
• AUTHORIZE R & D BY MISSION PURPOSE OF NEW ACQUISITION EFFORTS
AUTHORIZE SYSTEM FINAL DEVELOPMENT
AUTHORIZE SYSTEM PRODUCTION
• RECONCILE PERCEIVED NEEDS TO OVERALL AGENCY MISSION CAPABILITIES
• SET INITIAL COST, TIME, CAPABILITY GOALS
• ASSIGN "NEED RESPONSE" TO AGENCY COMPONENT(S)
• PROPOSE R & D BUDGET BY MISSION
• ALLOCATES APPROVED FUNDS TO SYSTEM CANDIDATES FOLLOWED BY ANNUAL REVIEW OF BUDGET AND MISSION NEED
APPROVE FOR COMPETITIVE DEMONSTRATION
APPROVE FINAL DEVELOPMENT
APPROVE FULL PRODUCTION
• SUBMIT MISSION DEFICIENCIES AND PROJECTIONS
SOLICIT PROPOSALS: SPONSOR PREFERRED CANDIDATES
• FUND ALTERNATIVES ANNUAL REVIEW FIXED-LEVEL FUNDING
CHOOSE SYSTEMS FOR COMPETITIVE DEMONSTRATION
• CHOOSE SYSTEM FOR FINAL DEVELOPMENT UTILIZING TEST AND OWNERSHIP COST DATA
• CONFIRM PRODUCTION DECISION UTILIZING INDEPENDENT OPERATIONAL TEST
USE
SYSTEM CONCEPTS
• EXPLORE ALTERNATIVES WITHIN AGENCY GOALS
PROTOTYPE FABRICATION AND DEMONSTRATION
FINAL DEVELOPMENT
PRODUCTION
TECHNOLOGY BASE
DIRECTLY AND INDIRECTLY FUNDED PUBLIC/PRIVATE/UNIVERSITIES/FCRC'S NONCONFIGURED SUBSYSTEMS, COMPONENTS, MATERIALS, ETC.
UNIFY ACQUISITION POLICY AND MONITORING
1
2
3
4
5
6
7
8
9
10
11
12

Fig. 2

[REF. 26]

practices, particularly Federal procurement. A major part of this review was directed toward the report of the COGP, in particular those 12 recommendations made by the Commission concerning the controversial area of acquiring major systems. The Federal Spending Practices, Efficiency, and Open Government Subcommittee is continuing to investigate the recommendations of the Commission and to develop a legislative program to implement the needed changes.

The Department of Defense, in response to the recommendations of the Commission, set three embryonic programs on the path perceived in the recommendations. These were the NAVSTAR Global Positioning System (Air Force), the Pershing II Program (Army), and the Shipboard Intermediate Range Combat System (SIRCS) (Navy). Congress requested that the GAO examine the programs for compliance with the Commission's recommendations. The GAO found that only SIRCS "had any significant similarity to the beginning steps of the Commission's plan" [Ref. 27]. This "significant similarity" resulted because the SIRCS program office worked closely with OFPP in developing their acquisition strategy [Ref. 28]. The program office has been concerned not only with the development of the SIRCS but also with conducting a "model A-109 program" as well. From all appearances, at least in the case of SIRCS, the Defense Department is sincerely trying to conform to the COGP recommendations.

III. OFFICE OF MANAGEMENT AND BUDGET CIRCULAR A-109

In this section, the evolution of the Office of Federal Procurement Policy from the first two recommendations of the Commission on Government Procurement to its issuance of Circular A-109 is traced. The contents of Circular A-109 are analyzed and its executive agency implementation is illustrated using OFFP Pamphlet No. 1. The relationship of Circular A-109 with the Congressional Budget and Impoundment Act of 1974, mission area budgeting and zero-based budgeting is presented. Finally, some inherent problems associated with the implementation of Circular A-109 are investigated.

A. OFFICE OF FEDERAL PROCUREMENT POLICY

The statutory framework governing federal procurement was one area of particular concern to the Commission on Government Procurement. There were numerous inconsistencies between the Armed Services Procurement Act of 1947 which governed the procurement system of DOD, the Coast Guard, and the National Aeronautics and Space Administration (NASA) and Title III of the Federal Property and Administrative Services Act of 1949 which governed the procurement systems of other Federal agencies. The COGP declared in its report that the existing statutory foundation is a combination of disparate and confusing restrictions and grants of limited authority to avoid the restrictions. The COGP believed that the

consolidation of the procurement statues under the guidance of one office would be a major step in fostering a regulatory system which would facilitate rather than hamper those wishing to do business with the Federal Government. Thus, the COGP proposed two recommendations which were to be the genius of OFPP [Ref. 26]:

> Recommendation 1. Establish by law a central Office of Federal Procurement Policy in the Executive Office of the President, preferably in the Office of Management and Budget, with specialized competence to take the leadership in procurement policy and related matters. If not organizationally placed in OMB, the office should be established in a manner to enable it to testify before committees of Congress. It should develop and persistently endeavor to improve ways and means through which executive agencies can cooperate with and be responsive to Congress.
>
> Recommendation 2. Enact legislation to eliminate inconsistencies in the two primary procurement statutes by consolidating the two statutes and thus provide a common statutory basis for procurement policies and procedures applicable to all executive agencies. Retain in the statutory base for an Office of Federal Procurement Policy in the executive branch to implement basic procedure policies.

The characteristics of the new office as envisioned by the Commission were to "be independent of any agency having procurement responsibility..., operate on a plane above the procurement agencies and have directive rather than merely advisory authority..., be responsive to Congress..., consist of a small...cadre of seasoned procurement experts" [Ref. 29].

While logic seemed to dictate location of OFPP in OMB, there was concern that authorizing legislation would become embroiled in the Congress vs. Ash dispute (as discussed later in this section). As a result, the Senate Committee on Government Operations delayed its actions. Alternatives

considered were an independent agency, location in the General Services Administration, and location in the General Accounting Office. But all had flaws [Ref. 30]:

> An independent agency would have little clout in applying policies to a giant such as the Defense Department. ...Defense Department would oppose location of...OFPP in GSA, another operating agency engaged in government-side procurement...Location in GAO would involve conflict of interest. The agency establishing procurement policies would also be the agency investigating procurement actions.

Interestingly, by placing the Office of Federal Procurement Policy (OFPP) in the Executive Office of the President, its policy promulgations would have the force of an Executive Order, which in turn would have the force of law unless specifically revoked by Congress. The GAO has stated that OFPP Circulars and rulings "have the force and effect of law." This fact, as discussed later in Section III.b., is significant.

The Congress vs. Ash dispute had two main roots; (1) Congress was becoming increasingly concerned with the growth of Executive power during the Nixon administration [31], and (2) Mr. Roy L. Ash, Former President of Litton Industries, whom Nixon appointed as the first director of the OMB, became a controversial figure when Litton's large cost overruns ecame known and allegations of mismanagement were made. Senator Proxmire was especially "ruffled" by Ash's appointment [32].

In early 1973, the House and Senate passed S 518 which would have required retroactive Senate confirmation of the Director and Deputy Director of the OMB. That would have

given the Senate a chance to examine the background and credentials of Mr. Ash. President Nixon vetoed the bill, and the House sustained the veto.

In June, the Senate passed S 37 which required confirmation only of future appointees. After dropping a four-year term provision and formally transferring powers to the OMB Director (which were then held by the President but delegated), the House passed the bill in late December. The Senate accepted the amendments in February 1974, and the bill was signed into law in March [31].

With apparent resolution of the Congress-vs.-Ash dispute taking shape in the form of S 37, the Congress returned to the problem of procurement. The Senate Government Operations Committee named an ad hoc subcommittee on Federal Procurement to implement the recommendations of the COGP with legislation [33]. Senator Lawton Chiles (a freshman Democrat from Florida) chaired the subcommittee. The House Committee on Government Operations also formed a subcommittee, chaired by Rep. Holifield.

In the hearings before the various committees, the Executive branch (as represented by DOD) and industry took somewhat different but predictable positions on the recommended OFPP.

DOD took a conservative, incremental stand as typified by the testimony of A. I. Mendolia, Assistant Secretary of Defense for Installations and Logistics [Ref. 33]:

> He expressed concern that the OFPP might usurp the procurement policy direction that the office of

> the Secretary of Defense now exercises...Mendolia suggested that "a small, competent Procurement Council" might be organized to coordinate interagency policies... "Defense Department recommends building on the present Procurement structure...What is needed is to establish this coordination point at the apex of an existing pyramid."

Industry, on the other hand, encouraged immediate establishment of the OFPP and that sweeping reforms be made. Also, the hearings were used as a forum to sharpen their edge of the ax. The testimony of the Aerospace Industries Association, the Electronic Industries Association and the National Security Industrial Association had three main thrusts [Ref. 29]:

> The present situation of mountainous piles of policy...and regulations...is intolerable. Uniformity and simplicity...should be the guidelines of the new office.
>
> A basic policy of the new office should be fairness to the contractor as well as the contracting agency.
>
> The new office should serve as an appeals court for contractors when government agencies...fail to implement properly the policies.

Finally, in 1974, the OFPP was established. Senator Chiles introduced S 2510 which would place OFPP in the Executive Office of the President but independent of the OMB. While the Senate passed the bill, the House amended it to place OFPP in OMB. The Senate accepted the amendment and the President signed on 20 August as PL 93-400 [Ref. 34]:

> The bill included detailed language to ensure the administrator's independence, including separate authorizations for the OFPP, a requirement that the administrator, rather than the OMB Director, keep Congress informed of OFPP activities, a provision vesting the functions of OFPP in the administrator

> rather than in the OMB director (the only other OMB official having statutory powers) and a requirement that the administrator could not be given any functions not provided in the bill.

The Congress viewed the OFPP as the guarantor that the COGP recommendations would be seriously considered in the executive branch. Congress also saw the OFPP as a focal point with special competence and leadership in Government-wide procurement and procurement-related matters. For the first time, Congress, industry, small businessmen, private citizens, and executive agencies have one place to go on procurement policy matters.

Hugh E. Witt was nominated by President Ford as the Administrator for Federal Procurement Policy on November 19, confirmed December 19, and sworn in on December 31, 1974. Thus, the OFPP became operational December 31, 1974.

The OFPP was set up with a staff of 16 professionals and six clerical positions. Hugh E. Witt, the first administrator said [Ref. 35]:

> I'm very pleased with the caliber of people that were interested in serving in this new office. Collectively, we have over 300 years of procurement related experience. The staff also reflects a good cross-section...four from industry, two from congressional staff, four from civil agencies, five from Department of Defense and one from Office of Management and Budget.

OFPP was established to provide overall direction of procurement policies, regulations, procedures, and forms within the executive branch. The Office was created to improve the economy, efficiency, and effectiveness in the procurement of property and services by the executive agencies.

While Public Law 93-400 sets forth the following six specific functions of the OFPP, Congress viewed the responsibilities of OFPP in a broad sense, encompassing the disciplines covered by the 149 recommendations of the COGP [Ref 36]:

- Establish a system of coordinated, and to the extent feasible, uniform procurement regulations.
- Establish criteria for soliciting the viewpoints of interested parties in the development of procurement policies and regulations.
- Monitor policies relating to reliance by the Federal Government on the private sector to provide needed property and services.
- Promote and conduct research in procurement policies.
- Establish a procurement data system which takes into account the needs of Congress, the executive branch, and the private sector.
- Promote programs for recruitment, training, career development, and performance evaluation of procurements personnel.

The organization and functions of the OFPP are described in detail in Section 225 of the Office of Management and Budget Manual [Ref. 37]. An overview structure of OFPP is given in Appendix F.

B. CIRCULAR A-109 AND ITS IMPLEMENTATION GUIDE

No activity of the Office of Federal Procurement Policy (OFPP) has received a higher priority of more attention than the development and implementation of a Government-wide policy for the acquisition of major systems. This policy was promulgated as Office of Management and Budget Circular A-109 [Ref. 1] on April 5, 1976. Full implementation of

Circular A-109 will revolutionize the way in which major Federal system acquisition programs are initiated and for which billions of dollars are spent. A measure of its significance is the fact that, in January 1977, GAO estimated that the cost to complete major systems acquisition programs of the executive branch now underway was $452.2 billion [Ref. 38].

OMB Circular A-109 is consistent with the intent of the 12 recommendations of the Commission on Government Procurement concerning major systems acquisition. It also reflects the results of the Major Systems Acquisition Reform Hearings conducted by the Subcommittee on Federal Spending Practices, Efficiency, and Open Government of the Senate Committee on Government Operations, during the period May 20-July 24, 1975, and August 24 and 26, 1976.

On August 26, 1976, the Honorable Lawton Chiles (D-Fla), Chairman, Subcommittee on Federal Spending Practices, Efficiency, and Open Government, stated the following:

> "At this time 4 years ago, the Congressional Commission on Government Procurement, on which I served, was reviewing a draft report on major systems for final approval. It proposed an integrated package of 12 reforms recommendations to overhaul the policies which control 585 major programs worth some $404 billion - everything from defense weapons to energy, transportation, and education systems. Of that $404 billion, $148 billion is in cost overruns, according to the General Accounting Office...
>
> "The reforms that were proposed by the Commission are significant...
>
> "The reforms call for a new front end for these programs, with new decisions by agency heads and the Congress on mission need. The new mission need decision, before any new program gets started, is critical to control the budget...

> "The reforms also call for more effective competition-starting not with a preordained, gold-plated paper design produced by agencies in concert with major contractors - but, instead, starting with a basic statement of the problem - the mission need - with all of industry, small and new firms included, having a chance to use their best technology...
>
> "The reforms call for a modern management of Government programs, integrated to bring together our wealth of technology with national needs, to cut through the barriers of bureaucratic waste..."

Circular A-109 was extensively coordinated with the executive agencies, congressional staffs, industry representatives, and other interested parties. Almost 150 separate comments were received on three drafts of the Circular that were circulated for comment. In addition, a public meeting on the policy was held in Washington on December 16, 1975.

A principal intent of the reforms embodied in Circular A-109 is to reorient competition for major systems and focus it on the earlier phases of the process, not just on full-scale development. It is intended that competition will be broader based, require less commitment of resources by the competitors, and provide the best solutions to national needs primarily through industrial innovation.

a.

- Express needs and program objectives in mission terms and not equipment terms to encourage innovation and competition in creating, exploring, and developing alternative systems.

- Place emphasis on the initial phase of the system acquisition process to allow competitive exploration of alternative systems to meet mission needs.

- Communicate with Congress early in the system acquisition process by relating major system acquisition programs to agency mission needs. This communication should follow the requirements of OMB Circular A-109 concerning information related to budget estimates and related materials.

-Establish clear lines of authority, responsibility, and accountability for management of major systems, make decisions at appropriate managerial levels, and obtain agency head approval at key decision points in the evolution of each acquisition program.

-Designate a focal point to integrate and unify the system acquisition management process and monitor policy implementation.

-Rely on private industry in accordance with the policy established by OMB Circular A-76.

Circular A-109 (Appendix G) is written in rather simple language and contains only 12 pages (two of which are taken up with definitions). It is not a rigid guide for all situations but a flexible invitation to exercise judgement within certain boundaries. It recognizes that each major system acquisition program is unique in terms of time, cost, technology, management and contracting approach. Despite these differences, the basic process and principal activities in the process are common to all programs. Circular A-109 addresses this basic process and provides an integrated framework to unify mission needs with program implementation.

Circular A-109 emphasizes top Congress and Executive leadership at the front end of the systems acquisition cycle. It states that while "technical and program decisions normally will be made at the agency-component or operating-activity level," four key decisions "should be made by the agency head." These four decisions are [Ref. 1]:

-Identification and definition of a specific mission need to be fulfilled; the relative priority assigned within the agency, and the general magni-invested;

-Selection of competitive system design concepts to be advanced to a test/demonstration phase or authorization to proceed with the development of a noncompetitive (single concept) system;

-Commitment of a system to full-scale development and limited production;

-Commitment of a system to full production.

Significant benefits anticipated from implementation of Circular A-109 included:

-Greatly reduced cost overruns and elimination of much of the controversy of the past two decades regarding the need for specific systems.

-Improved opportunities for innovative private sector contributions to meet national needs.

-Information flow between agencies and Congress consistent with the Congressional Budget Act of 1974.

-An orderly process for acquiring major systems in all agencies, thus eliminating inconsistencies of management attention and approach while providing flexibility for agencies to meet unique needs.

If these policies are implemented as intended, savings of billions of dollars could be realized by avoiding the start-up of programs that are later cancelled because the need did not exist, other programs were given higher priority, or other less costly ways were found to satisfy the need. In addition, when programs have been initially recognized as required to meet a need, the agency head will have an opportunity to reevaluate the need periodically and reorder priorities as necessary. Dollar expenditures required can also be reevaluated as a program proceeds from system definition, through commitment to full scale system development and limited production, to commitment of full system production. The exercise of these new techniques will have a favorable impact upon the Federal budget.

To further amplify the intent of Circular A-109 and help integrate these four key decision points into the major System Cycle, OFPP issued OFPP Pamphlet No. 1 in August 1976 [Ref. 4]. The macro-view of the life cycle of a major system is depicted as shown in Figure 3.

The Major System Acquisition Cycle is seen as a single closed loop with the four key decision points indicated by circled numbers. The various activities indicated before and after these decision points are themselves interactive loops within the single closed loop providing feedback at each decision point. The feedback loops are not drawn on the figure for clarification and simplification purposes.

The most logical point at which to enter the Major System Acquisition Cycle to evaluate content of Circular A-109 is at the "Mission Analysis" activity. Here, the Agency's science and technology base is drawn upon in the generation of a mission need. This science and technology base will is continuously reviewed throughout the acquisition life cycle. In the mission anlaysis, the Agency's goals and objectives are analyzed to ensure consistency of the developing need with them. Technical advancements are investigated for opportunities to improve the Agency's operations. Deficiencies in the Agency's current capabilities to accomplish its mission are examined. Cost reductions, such as ownership costs, are questioned for improvements. Agency environments, such as to national defense for DOD, are analyzed to ensure mission capabilities are not impaired.

MAJOR SYSTEM ACQUISITION CYCLE

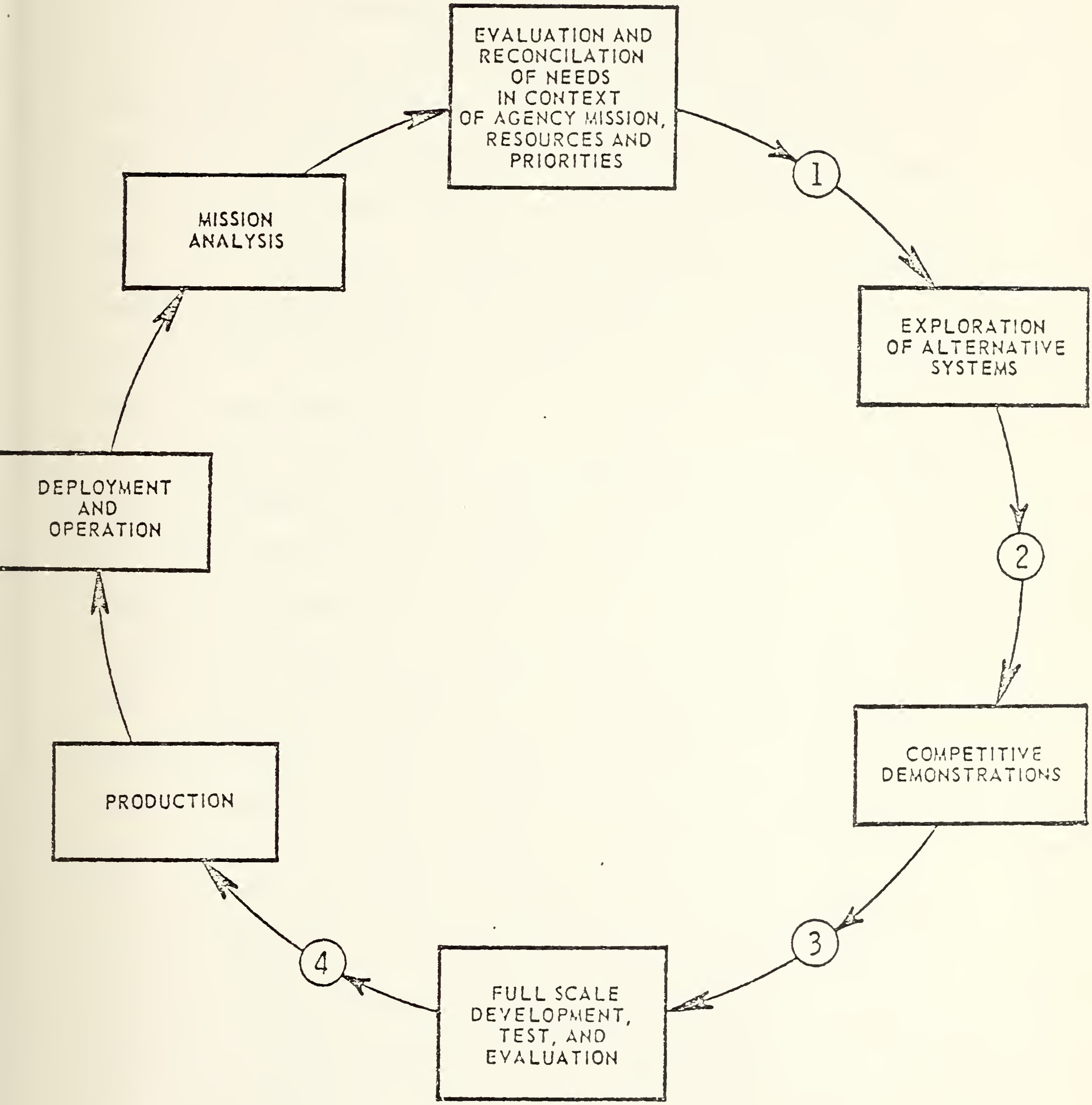

EVALUATION AND RECONCILATION OF NEEDS IN CONTEXT OF AGENCY MISSION, RESOURCES AND PRIORITIES
1
EXPLORATION OF ALTERNATIVE SYSTEMS
2
COMPETITIVE DEMONSTRATIONS
3
FULL SCALE DEVELOPMENT, TEST, AND EVALUATION
4
PRODUCTION
DEPLOYMENT AND OPERATION
MISSION ANALYSIS

Fig. 3 [REF. 4]

From this mission analysis and evaluation comes a need to accomplish an agency's goals and objectives. This need will be written in terms of mission purpose, end objectives, capabilities, time constraints, value of meeting the need, the environment in which the need must survive, relative priority and operating constraints. For example, within DOD, current inventories must be recognized. The agency can not simply come out with a need and wipe the slate clean and start over. Existing force levels, existing research and development and existing programs could be considered constraints. It should be noted that the need should not be written in terms of a specific equipment solution.

Once the need has been evaluated and reconciled in the context of agency mission, resources and priorities, the first key decision point (indicated by the circled "1" in Figure 3) is reached. At this point, the agency head has the option of agreeing and approving the mission need statement. It is at this point that the agency begins to bring together the budget and procurement aspects of the process. Here the agency works with OMB articulating the mission need in putting the President's Budget together. As discussed in the next segment, beginning in FY 79, each agency will be required by law to submit budget information in accordance with assigned agency mission areas and to relate agency programs to these missions. The Congressional Budget Act of 1974 along with Circular A-109 provides the basis for establishing an earlier, more meaningful communication with

Congress in the budget process. The objective is to have Congressional level issues regarding needs resolved earlier in the Major System Acquisition Cycle before the commitment of major resources and selection of solutions. Congress would then ostensibly withdraw from its traditional annual process of detailed review of system solutions and data and focus on the broader questions of agency missions and roles (a more appropriate role for Congress). This would permit Congress to consider the need within the context of overall national priorities of other programs and needs.

Mr. Fred Dietrich, OFPP, in an appearance before the National Contract Management Association (NCMA) meeting on 26 May 1977 [Ref. 39] gave a pertinent example of this earlier involvement of Congress in the debate of mission need existence. The U. S. Air Force in advocating the B-1 bomber aircraft was seeking a replacement for the aging B-52 aircraft as the third leg of the Strategic Triad. According to Mr. Dietrich, the B-1 controversy would not have occurred had the need been resolved through debate with Congress at the onset of the problem and not after millions of dollars had already been spent. The Air Force proposed both the need and solution simultaneously to Congress after much delay caused by internal disagreement within the Air Force. Had the need for the B-1 aircraft been approved by the Congress initially, there would have been no necessity to debate the mission need at each budget cycle and the program might have had smoother sailing through Congress at budget approval time.

Circular A-109 proposes that a program manager be assigned to the newly formed program immediately following the first decision point. The program manager would be designated in writing and would be given a charter with clear channels of authority and accountability. Anyone impacting on decisions made by the program manager in his exploration of alternative system must document those actions. The program manager would be a solution advocate, vice a need advocate, and would eventually come back to the agency head with an evaluation of alternative concept designs. The prime purpose of the program manager at this point would be to initiate program implementation. The program manager's first actions would be directed at assembling a program team and initiating an acquisition strategy. (The term strategy is used to indicate a dynamic, evolving process as opposed to a plan indicating a rather inflexible process.)

The program acquisition strategy can be broken down into three basic areas - management, technical and business - and tailored for that particular program. In the management portion of the acquisition strategy, the program manager develops his program office structure - whether to have a large self-contained office composed of all resources and disciplines pertinent to the program (such as a U. S. Air Force SPO) or to have a matrix office composed of a small cadre of dedicated personnel who draw upon functional offices to supplement (such as U. S. Navy Project Offices). In the technology acquisition strategy, system engineering decision

making and staffing details are addressed. If a purely management organization is to be used during the concept evaluation phase to integrate contractors, then provisions to ensure hardware accountability should be made. In the business acquisition strategy, items such as the different types of contracts to be used in each of the phases should be considered. An analysis should be made of program life cycle costs such as ownership costs and design-to-cost goals and methods for measuring cost and performance progress and financial planning.

The acquisition strategy formulated by the program manager will form a basis to communicate with all levels of management within his agency, his own program office team, DOD and Congress, as well as with private industry. While the acquisition strategy will encompass the entire program life cycle, emphasis will necessarily be placed on near term actions. As the program proceeds and periodic reviews are made, successive phases of the acquisition strategy would be emphasized. This incremental acquisition strategy called for in Circular A-109 would minimize the administrative burden and provide program direction to accomplish program goals and objectives. At program initiation, the program manager could not reasonably address all parameters anticipated in the program life cycle. The program manager would possibly be providing support to a higher level manager, initially, who would have the authority to coordinate actions involving more than one existing system within a mission area. By maintaining a flexible acquisition strategy, it is

possible to evaluate and schedule critical decisions as the program progresses.

In the "Exploration of Alternative Systems" phase of the Major System Acquisition Cycle, the program manager will depend on private sector for solicitation of system design concepts. Innovative ideas could also come from government labs, universities and other government funded organizations such as NRDC'S. These innovative ideas from government sources would be made available to private industry in formulating their response to request for proposals at the contractor's option. As an example, the Navy's SIRCS program provided several volumes of government furnished information to private industry in requesting proposals because of a lack of updated operational expertise in surface warfare platforms and scenarios. The information was used by private industry in their concept formulation responses.

If, however, the agency head decides at the first key decision point that a unique solution exists to his particular mission need because of technical or economic reasons, then he may request the private sector to bid on this unique approach. This action would be an exception to Circular A-109 and would have to be documented and coordinated with OFPP and OMB.

OFPP can not interfere with the establishment of the mission need or the need statement or the source selection process. However, the budget examiners of OMB can question the agency's budgets for compliance with Circular A-109.

The General Accounting Office (GAO) will still be the recipient of protest regarding Circular A-109 non-compliance. An example of this was the recent protest received by GAO over the Air Force's F-16 aircraft [Ref. 39].

An important aspect of Circular A-109 is the early invitation of meaningful competition by soliciting private industry to develop alternative system concepts. An expanded picture of the Exploration of Alternative System Phase is presented in Figure 4. The program manager would issue a Request for Proposal (RFP) with wide dissemination to both large producers and small contractors to obtain a wide range of innovative ideas and system design concepts. The desired result in the contractor's response is a system design concept or at least an understanding of the concept. What is desired is a response to a mission need, not a prescribed hardware solution nor a predetermined government specified solution.

Evaluation of the RFP responses would be done by an in-house team of technical specialists or through the assistance of government labs, providing the labs had not submitted a response. After evaluating each of the proposals and choosing the most feasible ones, the selected contractors would be provided funding through short term, parallel contracts to refine their system concept approaches.

When the competing contractors submit their concept design proposals in response to the short term, parallel contracts, the program manager will enter into a source

EXPLORATION OF ALTERNATIVE SYSTEMS

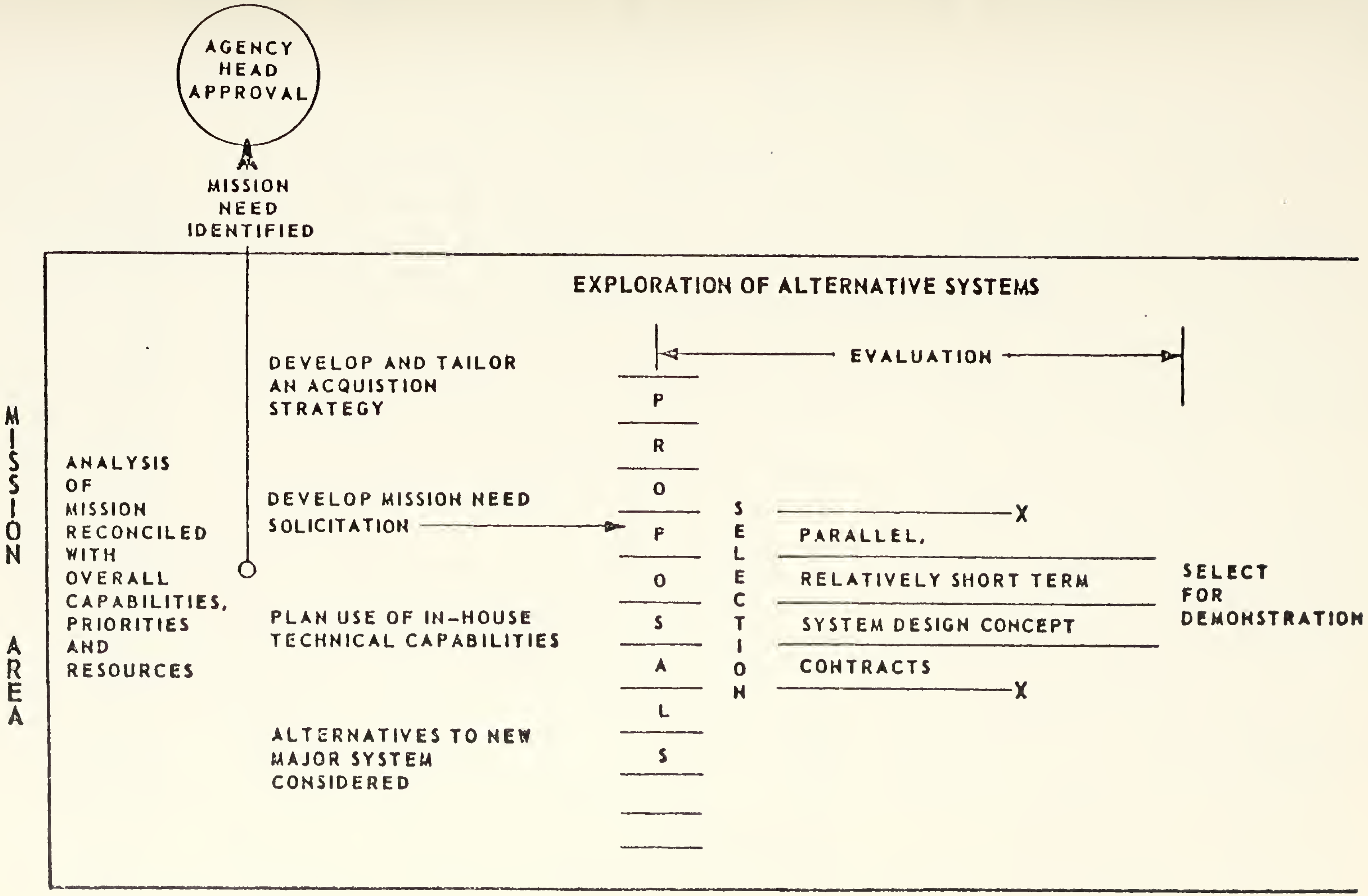

AGENCY HEAD APPROVAL
MISSION NEED IDENTIFIED
MISSION AREA
ANALYSIS OF MISSION RECONCILED WITH OVERALL CAPABILITIES, PRIORITIES AND RESOURCES
EXPLORATION OF ALTERNATIVE SYSTEMS
DEVELOP AND TAILOR AN ACQUISTION STRATEGY
DEVELOP MISSION NEED SOLICITATION
PLAN USE OF IN-HOUSE TECHNICAL CAPABILITIES
ALTERNATIVES TO NEW MAJOR SYSTEM CONSIDERED
EVALUATION
PROPOSALS
SELECTION
PARALLEL,
RELATIVELY SHORT TERM
SYSTEM DESIGN CONCEPT
CONTRACTS
X
X
SELECT FOR DEMONSTRATION

Fig. 4

[REF. 4]

selection process with his program team. Assisting the program manager in this task will be a team of experts in various disciplines to evaluate the different aspects of the proposals. This expertise will probably come from in-house personnel, such as government labs not involved in submitting proposals or in government preconceived solutions. For example, if the Naval Air Development Center (NADC) had a predetermined solution regarding Vertical/Short Field Take-Off/Landing (VSTOL) aircraft, then the program manager would need to bring in other government experts, preferably with previous VSTOL experience.

In this source selection phase, the most beneficial system design concepts would be chosen based upon such parameters as cost of acquisition and ownership costs. Small, highly technical companies would be considered if they could demonstrate production development accountability such as by teaming arrangements with larger hardware producing corporations. These smaller companies would also have to demonstrate viable production capabilities. Circular A-109 calls for, if economically feasible, multiple awards for different design concepts during this phase.

The winning contractors of this source selection exploration phase would have to have shown in the responses the following:

-Set of system functional requirements and specifications prepared by the contractor for his system design concept, not a set of government specifications.

-System parameters and constraints.

-Criteria to determine responsiveness of system design concepts to meet the mission need.

-Feasibility analysis to demonstrate that the proposed system concept is within the state-of-the-art, within the framework of resource capabilities, and realizeable in terms of allocated budget and in terms of schedule.

These first contracts could result in proposals to continue the design study, both concept and hardware, to reduce the risk before proceeding with system. If the risk is low and acceptable, these contracts could result in a hardware proposal for competitive demonstration in the next phase.

The program manager upon completion of the source selection process can now go back through his agency's chain of command with the acceptable proposals. The program manager can recommend to the agency head that the selected alternate system design concepts be pursued into the "Competitive Demonstrations" phase. If the agency head deems it not economically feasible to pursue multiple concepts and the agency head chooses to pick only one proposal, this again is an exception to Circular A-109 and should be coordinated with OFPP/OMB. One of the main objectives of Circular A-109 is to keep competition alive throughout the Major System Acquisition Cycle, even through production, if economically feasible.

The second key decision point in the Major System Acquisition Cycle (indicated by the circled "2" in Figure 3) is reached. The agency head must reaffirm the mission need, accounting for changes in priorities and threats. The program manager, in turn, must ensure that the original

baseline information is still valid. All acceptable system alternatives are considered. The agency head then gives his approval to proceed into the "Competitive Demonstration" phase.

The remaining phases and key decision points in the Major System Acquisition cycle are similar to the activities in the major system life cycle prior to the issuance of Circular A-109. For completeness of discussion, a brief overview of the remaining cycle will be given.

The Competitive Demonstration phase is used by the contractors to transition their system design concept to experimental hardware, The concepts are verified as being sound and able to perform in an operational environment. These demonstrations provide a basis for selection of system design concepts to be continued into Full Scale Development (FSD) phase. These competitive demonstrations normally involve only critical subsystems, although in some cases could involve a prototype of a complete development model.

At the third key decision point (circled "3" in Figure 3), the agency head again reaffirms the mission need, program objectives and risks. The agency head approves the alternative systems that have been competitively demonstrated to be viable and gives his approval to proceed into the Full Scale Development Test and Evaluation Phase.

During the FSD phase, critical sub-components demonstrated earlier are combined to a full scale prototype and complete system demonstrations, test and evaluations are

analyzed. During this phase before the production award is made, a "fly-off" is required to be held if economically feasible.

At the fourth and final key decision point, (circled "4" in Figure 3), the agency head again reaffirms the mission need and program objectives. He approves the final elimination among the remaining competitors to choose the best system, or systems if economically feasible, that meet the mission need within overall life cycle cost considerations to proceed into production, deployment and operation.

A more graphic view of the Major System Acquisition Process as specified in Circular A-109 is given in Figure 5. This figure shows the same four key decision points by the agency head. From program inception to the production decision, viable alternatives to system concepts are considered. Each contractor carries his own unique concept through in competition to the production award. The number of alternatives are narrowed at each decision point (as indicated by the two converging lines in Figure 5) by elimination of less desirable system concepts. Successful contractors are funded through parallel, short-term contracts to refine the cycle. Evaluation of these system concepts is based on actual testing and demonstrations of subcomponents or fully operational prototypes depending on the phase of the program cycle.

A diagram often used to illustrate the life cycle of a major system but not updated to incorporate the framework

MAJOR SYSTEM ACQUISITION PROCESS

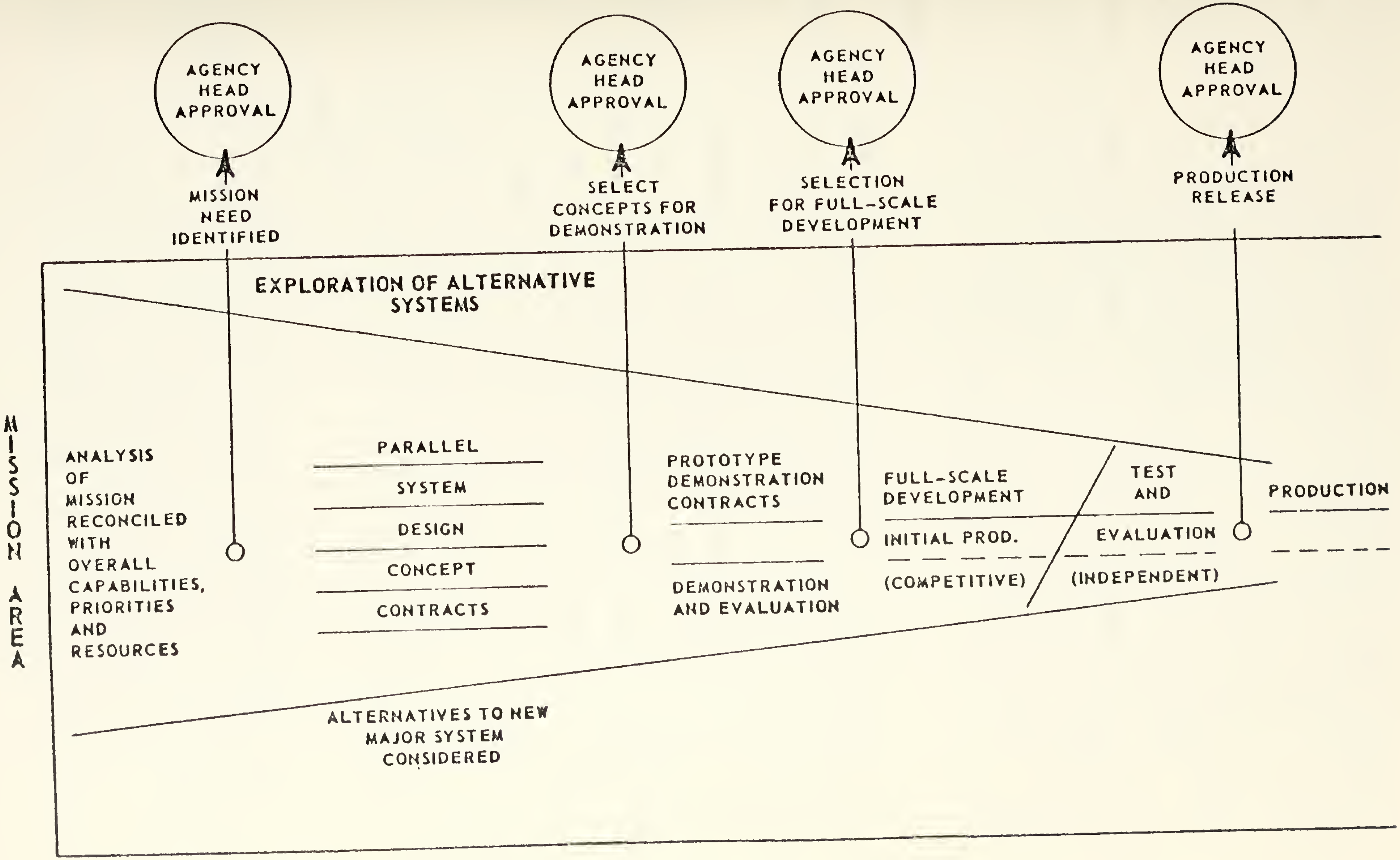

AGENCY HEAD APPROVAL
MISSION NEED IDENTIFIED
AGENCY HEAD APPROVAL
SELECT CONCEPTS FOR DEMONSTRATION
AGENCY HEAD APPROVAL
SELECTION FOR FULL-SCALE DEVELOPMENT
AGENCY HEAD APPROVAL
PRODUCTION RELEASE
EXPLORATION OF ALTERNATIVE SYSTEMS
MISSION AREA
ANALYSIS OF MISSION RECONCILED WITH OVERALL CAPABILITIES, PRIORITIES AND RESOURCES
PARALLEL
SYSTEM
DESIGN
CONCEPT
CONTRACTS
PROTOTYPE DEMONSTRATION CONTRACTS
DEMONSTRATION AND EVALUATION
FULL-SCALE DEVELOPMENT
INITIAL PROD.
(COMPETITIVE)
TEST AND
EVALUATION
(INDEPENDENT)
PRODUCTION
ALTERNATIVES TO NEW MAJOR SYSTEM CONSIDERED

Fig. 5

[REF. 4]

of Circular A-109 is presented in Figure 6. This figure shows the four key decision points for agency head approval. This figure shows more graphically the consideration of mission area analysis, taking into account the input parameters of technological advancements, cost of systems, threats, money available, priorities and resources. The resulting Mission Need Statement for the agency is displayed prior to the new program of initiation decision point. The phased activities between the key decision points are also exhibited.

Key issues inherent in Circular A-109 besides the formal structuring of the Major System Acquisition Cycle include:

(1) the designation of each agency of an "Acquisition Executive" to integrate and unify the mangement process for the agency's major system acquisitions. He will be responsible for developing and monitoring procedures and practices under Circular A-109 implementation to ensure compliance within the agency. Each agency which acquires - "or is responsible for activities leading to the acquisition of" - major system will establish "clear lines of authority, responsibility and accountability for management of its major system acquisition programs" [Ref. 1].

(2) a separate fund to expand the technology base of each agency. The money designated for a specific system development should be with that system mission need. For example, in the DOD and NASA Fiscal 1978 budgets, more than 35 new program starts were identified for Congress on which the

The Development Process for A Major System

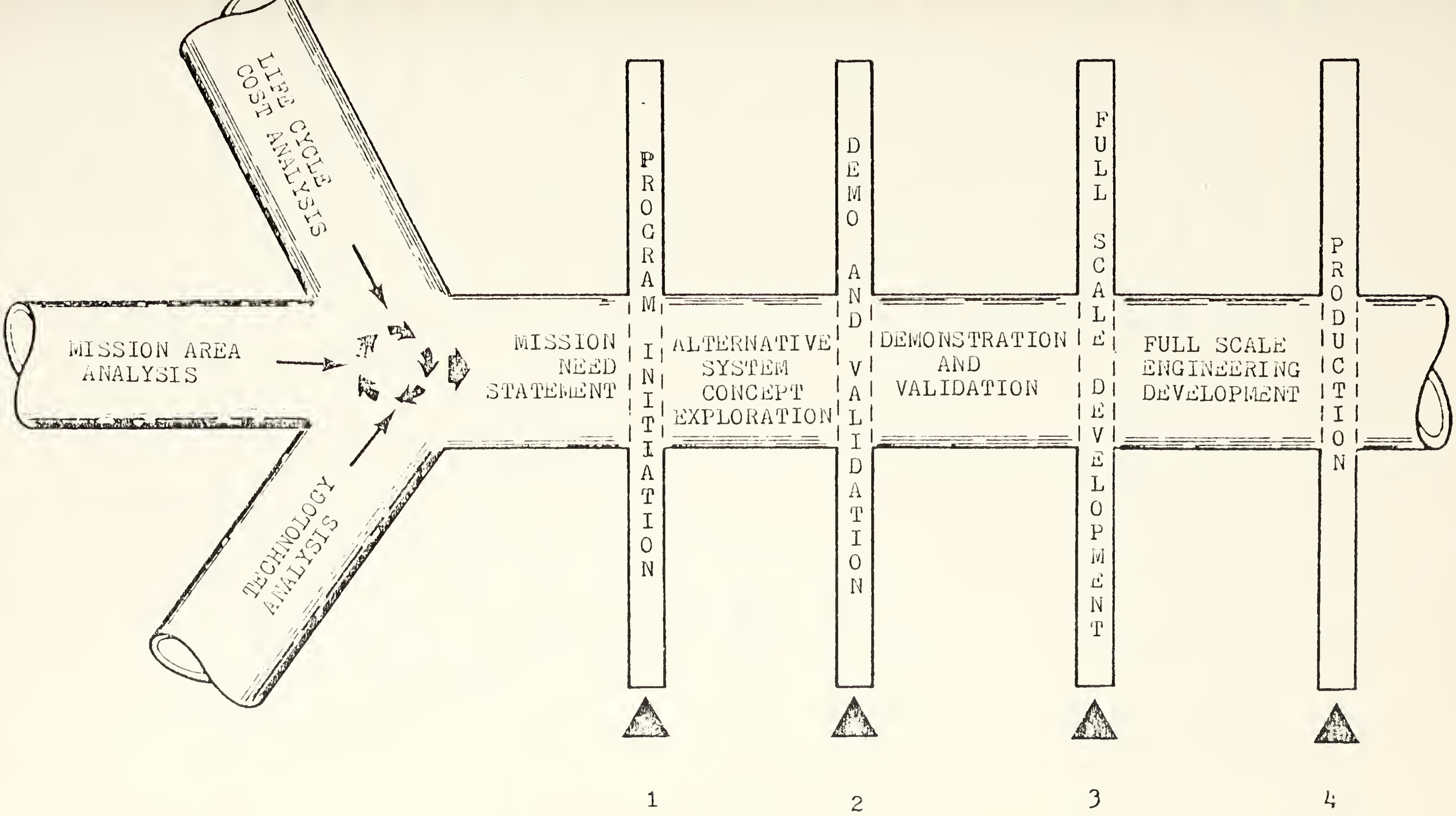


Fig. 6

agencies have been spending small amounts of money for years under the categories of "Research" or "Exploratory Development."

(3) a predetermined solution to the problem along with the statement of "need" should not be given to bidding contractors. Neither should prime contractors give their subcontractors similar guidance. The guidance in both cases should be "Here is our problem. What is your solution?"

(4) each agency through its program managers should ensure appropriate trade-off among investment cost, ownership (life cycle) costs, schedules and performance characteristics.

(5) exceptions to Circular A-109 must be approved by the agency head. If an agency head chooses a single concept or chooses to proceed with FSD on a critical subcomponent, such as a jet engine for a developing aircraft, then he should document and coordinate his actions with OFPP/OMB.

Regarding the implementation status of Circular A-109 among Federal agencies, OFPP reports that of the 22 major Federal agencies affected, 19 agencies have submitted approved plans although six of these have been approved subject to the agency providing additional data. These 19 agencies account for 99% of the Federal money spent. All 19 agencies have appointed an "Acquisition Executive" and have defined within their own agency's terms what constitutes a "Major System." Nine agencies (including DOD) have issued implementing instructions to their component elements although a large amount of paperwork regarding rewriting of rules and regulations remain.

OMB oversight of Circular A-109 is evidenced by its investigation into each new major system start with the agencies. The budget examiners are now asking, "Has the agency head approved the mission need? Has the agency appointed a Program Manager? Has the program manager developed his acquisition strategy?" If the budget examiners don't get satisfactory answers, then the program doesn't get put in the President's budget. For example, the Social Security Administration (SSA) requested an Automatic Data Processing (ADP) system but neglected the budget examiners' guidance on competing the system with several contractors in accordance with Circular A-109. The SSA didn't come in with an acceptable request and the ADP system involving several missions of dollars was not put in the Fiscal Year 1978 budget.

The Legislative Branch interest in Circular A-109 implementation status is shown in the various Congressional committees and staff inquiries regarding compliance or noncompliance of various budget requests. The General Accounting Office (GAO) has conducted several studies involving program compliance with Circular A-109 and has issued reports of an instructi-nal nature regarding aspects of Circular A-109.

On March 10, 1977, Mr. Bert Lance, Director of the Office of Management and Budget, before the United States Senate Appropriations Subcommittee, stated with respect to OMB Circular A-109 that:

> "...Our objective is to promote broad acceptance and understanding of the policy through an aggressive

> orientation and indoctrination program that reaches both Government and industry groups."

Mr. Lester Fettig, Administrator, OFPP, confirmed the emphasis OMB will place on the executive branch agency implementation of Circular A-109 in a recent interview [Ref. 40]:

> "During my confirmation hearings, I outlined my objectives and priorities for the next 28 months and expressed confidence that we would indeed bring about many of the long sought reforms in the procurement process. I expect to report the following accomplishments when sunset comes in 1980...
>
> "Full and effective implementation of OMB Circular A-109, which prescribes how major systems will be acquired. Compliance with this Circular will be achieved in the civil agencies as well as the Defense Departments."

C. BUDGET EXECUTION AND EXPENDITURE CONTROL

The approved budget becomes the financial plan for the operations of federal agencies during the fiscal year. Most budget authority, and other budgetary resources, are made available by OMB under an apportionment system that assures the effective and orderly use of available authority.

The Congressional Budget and Impoundment Act of 1974 (88 STAT 297) provides that the executive branch may regulate the rate of spending by deferring the availability of funds to the approval of the Congress. Deferrals, which are temporary withholdings of budget authority, cannot extend beyond the end of the fiscal year and may be overturned by either House of the Congress at any time. Recissions, which permanently cancel existing budget authority, must be enacted by the full Congress.

How will the advent of OMB Circular A-109 affect the budget execution and expenditure control process? How will related policy reforms such as Mission Area Budgeting (MAB) and Zero Based Budgeting (ZBB) impact the federal budget process?

The Congressional Reform Act of 1974 requires Executive Agencies to submit their budget requests in mission-oriented terms, beginning with Fiscal 1979 submission, the current budget. The procedures spelled out by the Congressional Budget and Impoundment Control Act of 1974 were designed to give Congress a chance to weight the relative merits of various spending programs and--if it chooses--to cut programs that it finds ineffective.

During this same period (early 1970's) new policy was being generated to serve as enforcement for regaining Congressional control over the "uncontrollable" elements in the budget without necessarily cutting popular programs. OMB Circular A-76 [Ref. 41] made it the policy of the government to rely on the private sector for such goods as are commercailly available. Circular A-76 was not taken seriously until after Circular A-109 became executive policy in April 1976. Circular A-109 advocates a "systems approach" emphasizing high-level approval of an agency's need prior to the initiation of system development and production. Circular A-76 was re-emphasized, stating specific goals for the kinds of activities to be contracted out, proportion of in-house versus out-house activities, and comparison standards for judging in-house versus out-house performance.

The size and content of the defense budget is largely determined by the President's budget. OMB is a staff arm of the President to assist in the preparation of the budget, to supervise and control budget execution and to evaluate federal program performance. A special relationship exists for DOD in that budget estimates are reviewed jointly by OMB and DOD while all other agencies present their budgets for review by OMB and decision by the President.

Through the strict application of the OMB Circulars, the executive branch (which largely controls the size of the budget and the military mission emphasis) can also control (1) the budget portion spent in the private sector (Circular A-76) and (2) the rate at which major procurements are initiated (Circular A-109).

Circular A-109's application is minimal to the appropriations bill (creation of obligational authority), the authorization act (giving authority to purchase when Congress makes dollars available), and apportionment (allocation at the agency level) except for the interest in the total dollars available for major systems procurement. The FY-1978 Authorization Bill (HR 5970) differs from the Appropriations Bill (HR 7988) causing one of the few DOD designated A-109 programs (SIRCS) to receive opposing management directions, as discussed later in Section VI.

It is likely that DOD will try to narrow the number of mission categoreis to provide for transfer and reprogramming flexibility when apportionment is by mission areas. The Armed Service Committess, however, will probably continue to

insist on a heavy line item breakdown of each mission area project so that they can continue to micromanage. There is some validity in their approach as detailed mission area budgeting tends to break down service rivalry and redundancy.

Reprogramming is a non-statutory, low visibility budget activity which does not involve OMB. Recent requirements on required reprogramming approval, reporting and thresholds might eventually lead to the application of Circular A-109 to reprogramming. However, the recent reprogramming activity of the Senate Armed Services Committee allowed new program starts that were solution-oriented as opposed to needs-oriented. Even though the Senate Armed Services Committee reoriented its Fiscal 1978 budget hearing format toward a mission approach, this year Circular A-109 does not appear to be applied to reprogramming in FY-1978. Yet, the Senate Armed Services Committee Chairman, Senator John L. McClellan, would appear to be a proponent of Circular A-109, as shown in Appendix H.

The DOD Planning, Programming and Budgeting Ssytem (PPBS) was the alternate to the massive reorganization of DOD by President Kennedy. PPBS is considered to be the rational approach to conducting DOD business - as opposed to the political or organizational approach [Ref. 42]. Circular A-109 is intended to improve the PPBS process by increasing the early program efforts (such as requirements definition and alternatives tradeoffs).

However, the incremental nature of the government budgeting has prevented widespread acceptance of PPBS [Ref. 43],

and Circular A-109 will probably be confronted by a similar unwillingness to make major changes.

Wildavsky argues "we have to be prepared to accept the possibility that PPBS lacks necessary as well as sufficient conditions, that its disabilities occur not merely in program implementation but in policy design that, in a word, its defects are defects in principle, not in execution.... PPBS sacrifices the rationality of ends to the rationality of means; that is why seemingly rationale procedures produce irrational results" [Ref. 44].

Circular A-109 strikes at the heart of this criticism of PPBS "...Federal Agencies, when acquiring major systems, will:

a) Express needs and program objectives in mission terms and not equipment terms (solutions).

b) Place emphasis on the initial activities of the system acquisition process to allow competitive exploration of alternatives.

c) Communicate with Congress early in the system by relating major systems acquisition (MSA) programs to agency mission needs.

d) Establish clear lines of authority, responsibility, and accountability for management of MSA programs.

e) Designate a focal point responsible for integrating and unifying the system acquisition management process and monitoring policy implementation.

f) Rely on private industry in accordance with the policy established by OMB Circular No. A-76" [Ref. 1].

Note the primary requirement to state mission needs and objectives in mission terms.

Issues '78, Perspectives on FY-78 Budget, states the goals of OMB Circular A-113 as "integrating individual

department and agency management plans into the Federal Budget process." Circular A-113 contained three substantially new elements which have been incorporated into department and agency management plans [Ref. 45]:

- A mission statement specifying agency missions and relating them to missions of other agencies and departments.
- An evaluation review statement calling for program reviews to the budget cycle.
- A comprehensive management plan (goals, objectives and supporting activities) to achieve short-run objectives and overall goals.

The integration of management review of an agency's operations and activities with budgetary review of its requested funds for future years is a major governmental change.

While preceding discussion concerned the intended devices to identify needs and promote wise expenditure, the executive budget enforcement and control technique is Zero Based Budgeting (ZBB). Peter Pyhrr, who is a principal proponent of ZBB, defines it as [Ref. 46]:

> "An operating, planning and budgetary process which requires each manager to justify his entire budget request in detail, and shifts the burden of proof to each manager to justify why he should spend the money. This procedure requires that all activities and operations be identified in decision packages which will be evaluated and ranked in order of importance by systematic analysis."

The President can change the procedural documents like OMB Circular A-11 [Ref. 47] and implement ZBB through OMB Bulletin 77-9 [Ref. 48] without Congressional approval. Circular A-11 provides guidance to all Executive Agencies on how to put their Fiscal Year 1979 budget requests together including instructions reflecting both ZBB and mission

budgeting doctrine. As the Honorable Lester Fettig, OFPP Administrator, has stated [Ref. 49],

> "A-11 links ZZB and Mission budgeting in a most cogent fashion."

However, as it has been applied in three states, ZBB would be primarily a management tool for program operators (Congress and executive agency heads) rather than a policy process for the Chief Executive. In this sense, ZBB is oriented toward management rather than policy-making. The common objectives and expectations for ZBB include:

- rational budget cuts
- better budget support information
- provide top management with better insight into detailed organizational workings
- focus on organizational objectives
- integration of budgeting and operational management and control

ZBB clearly can be a powerful tool to allow the Congress to gain a measure of control over federal spending. It is not entirely clear whether the Executive Branch or the Congress would gain more power from the use of ZBB.

Mission Budgeting, in combination with Circular A-109, will not only have a profound effect on whether systems research, development and production funding requests are approved but also holds the promise of major improvements to the acquisition of major systems. As GAO pointed out in its 27 July 1977 report, "Mission Budgeting" [Ref. 50], concerning research and development programs, "the concept has significant potential for:

-"Helping the President and Federal Agencies formulate budgets according to end purposes, needs and priorities;

-"Strengthening Congressional policy review and program oversight;

-"Achieving greater public accountability in the use of Federal funds;

-"Providing one budget system oriented to both Executive and Congressional needs;

-"Clarifying mission responsibilities of the Federal Agencies and keeping them relevant to national policies and needs;

-"Serving as a structural foundation for 'zero-base' and 'sunset', i.e., kill the program or even the agency, reviews as well as governmental reorganization."

Figures 7, 8, and 9 illustrate how GAO envisions Mission Budgeting will affect programs within DOD [Ref. 49].

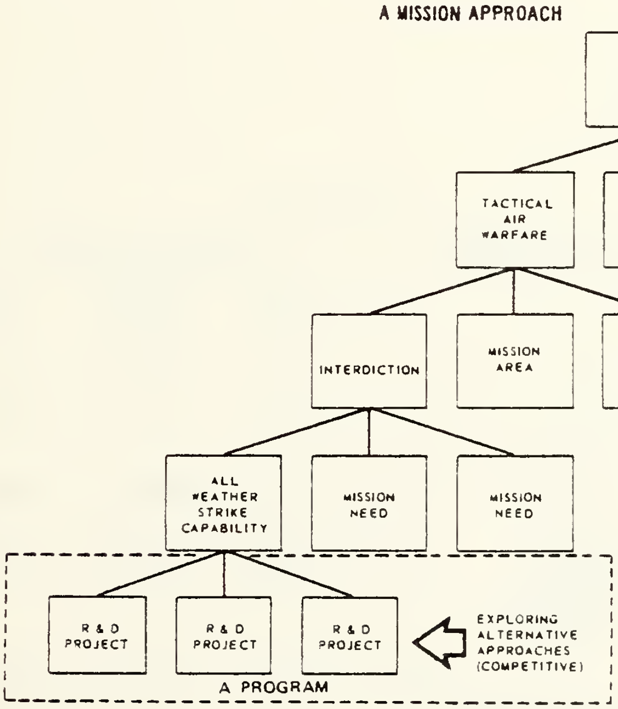
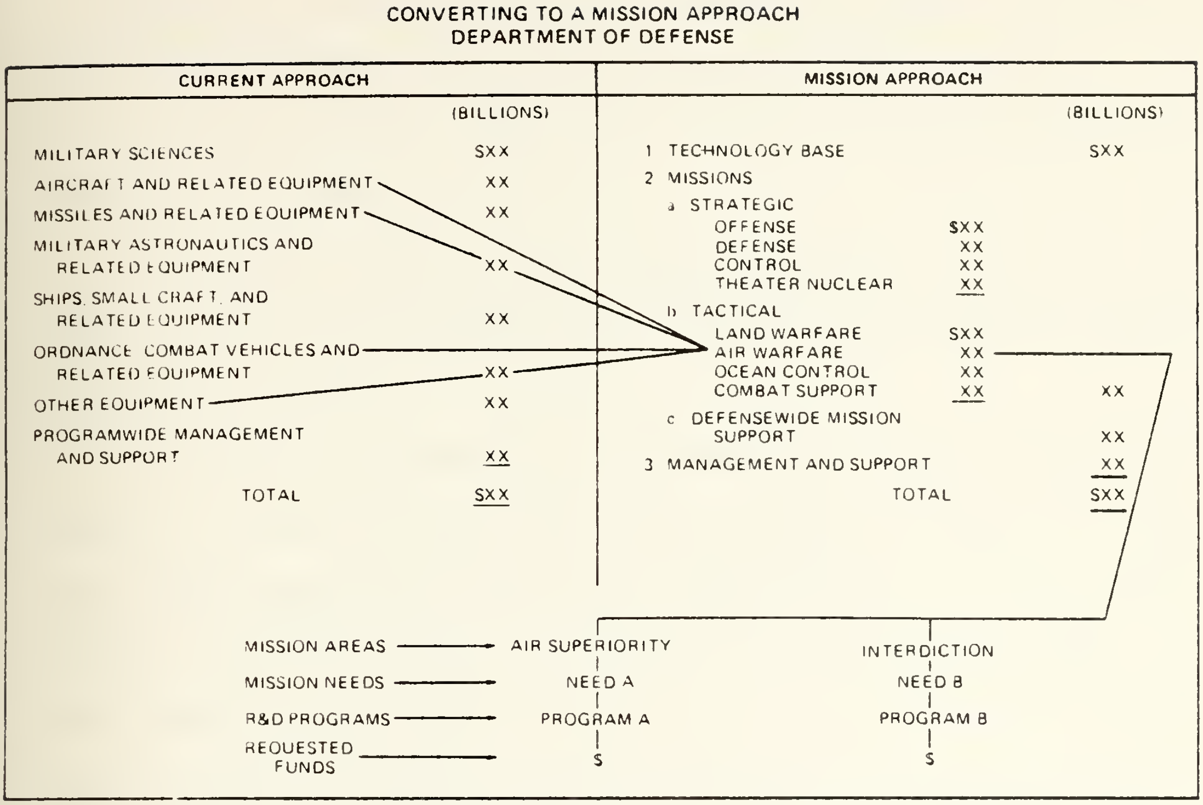


FIGURE 7



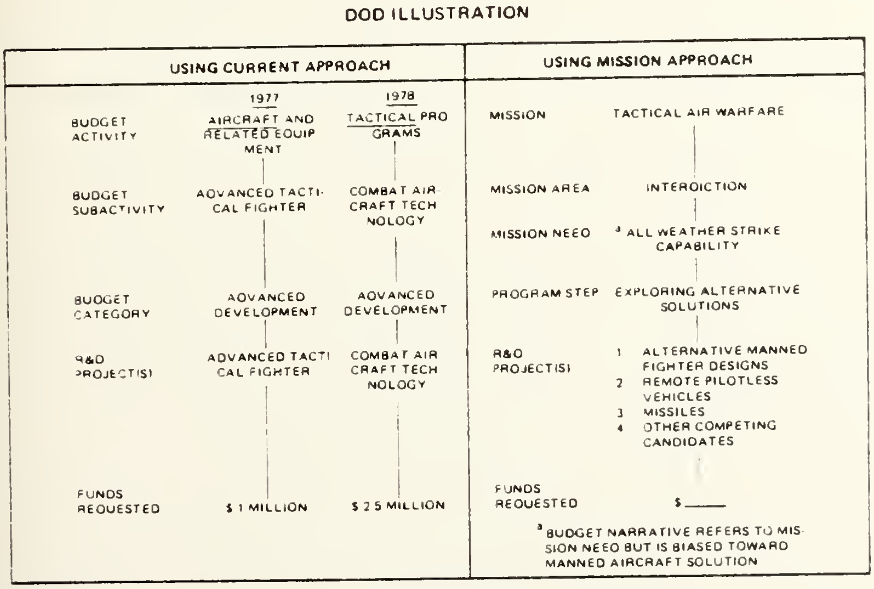
CONVERTING TO A MISSION APPROACH
DEPARTMENT OF DEFENSE

CURRENT APPROACH	(BILLIONS)
MILITARY SCIENCES	$XX
AIRCRAFT AND RELATED EQUIPMENT	XX
MISSILES AND RELATED EQUIPMENT	XX
MILITARY ASTRONAUTICS AND RELATED EQUIPMENT	XX
SHIPS, SMALL CRAFT, AND RELATED EQUIPMENT	XX
ORDNANCE, COMBAT VEHICLES AND RELATED EQUIPMENT	XX
OTHER EQUIPMENT	XX
PROGRAMWIDE MANAGEMENT AND SUPPORT	XX
TOTAL	$XX

MISSION APPROACH		(BILLIONS)
1 TECHNOLOGY BASE		$XX
2 MISSIONS		
a STRATEGIC		
OFFENSE	$XX	
DEFENSE	XX	
CONTROL	XX	
THEATER NUCLEAR	XX	
b TACTICAL		
LAND WARFARE	$XX	
AIR WARFARE	XX	
OCEAN CONTROL	XX	
COMBAT SUPPORT	XX	XX
c DEFENSEWIDE MISSION SUPPORT		XX
3 MANAGEMENT AND SUPPORT		XX
TOTAL		$XX

MISSION AREAS →	AIR SUPERIORITY	INTERDICTION
MISSION NEEDS →	NEED A	NEED B
R&D PROGRAMS →	PROGRAM A	PROGRAM B
REQUESTED FUNDS →	$	$

FIGURE 8



DOD ILLUSTRATION

USING CURRENT APPROACH	1977	1978
BUDGET ACTIVITY	AIRCRAFT AND RELATED EQUIPMENT	TACTICAL PROGRAMS
BUDGET SUBACTIVITY	ADVANCED TACTICAL FIGHTER	COMBAT AIRCRAFT TECHNOLOGY
BUDGET CATEGORY	ADVANCED DEVELOPMENT	ADVANCED DEVELOPMENT
R&D PROJECT(S)	ADVANCED TACTICAL FIGHTER	COMBAT AIRCRAFT TECHNOLOGY
FUNDS REQUESTED	$1 MILLION	$2.5 MILLION

USING MISSION APPROACH	
MISSION	TACTICAL AIR WARFARE
MISSION AREA	INTERDICTION
MISSION NEED	[a] ALL WEATHER STRIKE CAPABILITY
PROGRAM STEP	EXPLORING ALTERNATIVE SOLUTIONS
R&D PROJECT(S)	1 ALTERNATIVE MANNED FIGHTER DESIGNS 2 REMOTE PILOTLESS VEHICLES 3 MISSILES 4 OTHER COMPETING CANDIDATES
FUNDS REQUESTED	$____

[a] BUDGET NARRATIVE REFERS TO MISSION NEED BUT IS BIASED TOWARD MANNED AIRCRAFT SOLUTION

FIGURE 9

Figure 7, using the mission approach, shows how a typical budget request would be broken down into missions, mission areas, mission needs and finally to different projects within a program.

In Figures 8 and 9, the current approach of traditional DOD budgets is contrasted with the Mission approach proposed by Circular A-109.

Many OMB circulars and implementing directives are companion to the Circular A-109. This theme is being approached from many directions, the main theme being, in the author's opinion, we have got to straighten up our act and show we can conduct a meaningful acquisition process before constituent pressure becomes directly opposed as to how we spend the tax dollars.

A joint House-Senate Conference Report on Defense appropriations for Fiscal Year 1978"emphasized that the Department of Defense should adhere to OMB Circular A-109, and future funding of new programs will be contingent on compliance" [Ref. 51]. Mr. Fred Dietrich, Assistant Administrator for System Acquisition, OFPP, stated in Ref. 52, "Right at the leading edge of A-109 is Mission Budgeting."

D. POTENTIAL PROBLEM AREAS FOR CIRCULAR A-109

With any new innovative policy comes new problems which, if not recognized and controlled, can deter what would otherwise be significant and important changes. The Major System development process within the Executive Branch operates an environment containing unique problems. It is within these

problem areas that Circular A-109 must operate if implementation is to be successful.

A unique problem area for Circular A-109 implementation in the Federal agencies is the budgeting environment involving Congress. Congressmen, accustomed to looking only at budget line items of projects in which they have a special interest, are going to have to step back and evaluate whether or not whole programs are worth doing. This preoccupation with budget line items combined with large volumes of justification data containing technical details has involved Congress in micromanagement of individual programs. The result has been a Congressional distraction away from more fundamental mission need problems and issues. In effect, "the back end of the problem has been studied to death while the front end has been largely ignored"[Ref. 49].

But there are signs that Congress is in the process of accepting Circular A-109. Senator John McClellan, Chairman of the Senate Armed Services Committee, has already requested and received a detailed report from DOD on some 32 DOD major system acquisition programs and their Circular A-109 implementation status, as given in Appendix H. Senator Lawton Chiles has made it clear that he will support programs which follow Circular A-109 principles and intends "to take a run at any which don't." As discussed earlier, GAO has ruled that Circular A-109 has the effect of law unless countermanded on a program by program basis by Congress. As Circular A-109 advocates on Capital Hill are beginning to

make clear, the only way their colleagues can by-pass Circular A-109 philosophies on specific programs is to pass a law requiring the exception each time, and "They can't keep doing that to us forever" [Ref. 53].

The Executive agencies, themselves, will also have to reorient their budget requests and reviews from line items to mission areas. The initial reaction from the agencies ranged from, "That's not applicable to us," to "We already do that." According to Mr. Fred Dietrich, OFPP, as the Fiscal 1979 budget requests are submitted to OMB, agencies which do not think Circular A-109 applies are going to find out that it does and program managers who think they already follow Circular A-109 though in different form are going to find out they do not. Some key agency officials who have not made up their minds about Circular A-109 are going to learn they must comply if their programs are to be funded. OMB budget examiners will be working closely with OFPP to assure compliance with Circular A-109. Senator Lawton Chiles has noted [Ref. 49]:

> "Agencies traditionally have come in only to justify new dollars. Nobody comes back to justify the first dollar. That is what zero-based budgeting will require. I don't know how you do that properly unless you already know what the mission is. And, in the present line-item budget approach to the budget, you don't get those mission descriptions."

Mr. Lester Fettig has commented, "A-109 can't force reform in system acquisition thinking. It has come from the Budget Reform Act, from mission oriented budgeting. The agencies have to begin to orient their thinking to mission needs at the R and D stage" [Ref. 54].

Another budgeting problem is that Circular A-109 compliance requires a fiscal commitment to a program before the system hardware is defined. In the front-end (prior to key decision point 3) of the life-cycle of a program, proprietary information of competing concept system designs limits disclosure of those concepts and hardware which in turn causes difficulty for agencies and program managers in justifying and defending their budgets. Program managers will have to resist the pressure to make a premature commitment among the concept alternatives in return for a commitment in funds for their program. The Commission on Government Procurement (COGP) recognized this problem when it stated [Ref. 2]:

> To explore different system concepts and introduce a competitive development requires R&D money of a scale usually not made available until a decision has been reached that a given system approach should be pursued, something of a paradox.

The proprietary nature of the source selection process from the first Request for Proposal (RFP) to the selection of a single producer is necessary in order to avoid inadvertent technical transfusion of system designs and unwanted solutions. In order to realize the long term benefits of the Circular A-109 approach, program managers must resist the pressures for a premature commitment to saleable but non-viable systems. The long term benefits of competition will be difficult to quantify in requesting funding in the near term.

During the early life cycle phases, particularly the Exploration of Alternatives Systems, a closer government and industry liaison is required under Circular A-109. This

liaison must be controlled to prevent inadvertent slips of information that could result in technical transfusion of design feature and could also give unfair advantage to one or more of the competing contractors. The transfer of technology base knowledge to contractors during the Exploration of Alternatives Phase will require larger amounts of Government Furnished Information (GFI) which may result in additional cost for the program.

With Circular A-109, the prohibition of technical transfusion particularly in the Exploration of Alternatives Phase may cause an increase in time and resources spent in the front-end source selection. The parallel competition and the periodic source selections will create a continuous source selection process. Each decision to continue or drop a competing contractor will become a source selection decision. For major system programs, such decisions will have an important impact on the competing contractors. This may be a counter-productive effect of Circular A-109 with contractors minimizing exploration of alternative concepts because of the time, expense and effort associated with the source selection process.

The exploration of alternative concepts may likely increase the research and development (R&D) cost for a major system program. Circular A-109 requires an expanded front-end effort. Without adequate budgetary support, the base of alternative concepts will be artificially constrained, forcing a limit in the number of concept study contracts awarded.

Not only will the government have to reorient its R and D cost structure, but the manner and level with which contractors expend independent research and development (IR&D) funds may have to be reorganized. The internal funding of contractors for the front-end competition must be rechanneled in response to the required documented studies of mission need. The traditional arrangements of cost-sharing of front-end processes by the contractor must be revamped.

Mr. Lester Fettig, Administrator for OFPP, in a recent interview [Ref. 54] challenged the notion that there is a potential problem of increased cost and time in the front end of a major system program complying with Circular A-109. Mr. Fettig contends that the funds for the increased front-end requirements of Circular A-109 have always been and are presently available to the programs. He argues that the money is now hidden in the present contracts and that what Circular A-109 proposes is to more clearly identify those funds as R and D monies. In response to Circular A-109 lengthening of the life cycle, Mr. Fettig maintains that the "new"activities have always gone on but in an undisciplined, unstructured manner. Circular A-109 will structure the procedure and will allow competition to be the pacing factor in the front-end process and the total life cycle to be shortened.

One potential problem for which program managers must be alert is to ensure innovation in response to the concept proposals. The traditional contractor approach of proposing

the more marketable "Give the customer what he wants," instead "what he needs" must be discouraged. Also "Contractors with a solution looking for a need" must be controlled.

Finally, Circular A-109 has a potential problem of establishing too tight cost bounds prior to hardware definitions. Circular A-109 requires that program cost objectives be included in the initial mission need solicitation. The number of units to be produced is one of the most significant determinants of the total program cost and this determinant is most likely unknown to the program manager during the initial phase of the program. Without hardware definition, a program manager can only talk about affordability projections for a required capability. Full implementation of Circular A-109 and a re-orientation to mission area budgeting should make allocation of resources based on a mission capability an accepted practice.

IV. DEPARTMENT OF DEFENSE IMPLEMENTATION OF CIRCULAR A-109

In this section, the imapct of the issuance of key DOD policy documents in compliance with Circular A-109 is examined; in particular, DOD Directives 5000.1 [Ref. 5], 5000.2 [Ref. 6] and 500.30 [Ref. 7]. The resulting DOD policy and organization changes to the Major System Acquisition process are analyzed, especially the creation of the Defense Acquisition Executive, the changes to the front-end of the Major System Acquisition Life Cycle and the decentralization in decision making. The status of DOD implementation is investigated through discussions of DOD's submission of implementation plan to OMB/OFPP, a brief look at DOD components' preparation of internal policies and procedures and exploration of Congressional interest in DOD implementation.

A. KEY PERSONNEL AND POLICY DOCUMENTS

OMB Circular A-109 has made a major policy impact on DOD in the area of material acquisition. DOD has a key leadership role in the Federal agencies' implementation of Circular A-109. DOD was the first Federal agency to submit Circular A-109 implementation plans to OMB/OFPP in August 1976. During the formulation of Circular A-109, there was extensive interaction between OFPP and DOD, particularly the Director Defense Research and Engineering (DDR&E) regarding system acquisition format and structure [Ref. 3]. This interaction

continued after the issuance of Circular A-109 with the rewriting of key DOD policy documents. Circular A-109 has received top level DOD attention and implementation has continued with the change in the Administration in January 1977 and the subsequent reorganization and reassignments within DOD.

The Honorable Jacques S. Gansler, Deputy Assistant Secretary of Defense (Material Acquisition), has stated in a recent article [Ref. 55]:

> "About 70 percent of our total weapon system acquisition and support costs are essentially determined during the conceptual stages of equipment development. Because of this it is imperative that the necessary kind of attention be focused at the front end of the process, to reduce 'downstream costs'...
>
> "More attention is being given to the initial stages of the acquisition process. As directed by OMB Circular A-109, entitled 'Major System Acquisitions,' the mission need is evaluated more critically and a wider range of available technologies to meet that need, quickly and efficiently - are considered both in terms of performance and life-cycle costs...
>
> "Historically, the length of the acquisition cycle has been perturbated by two things - first, disagreement on what is wanted, and second, the tendency to bite off a larger technological chunk than we are capable of digesting. Circular A-109 forces us to resolve the first item, and Secretary Brown's recent polciy statements emphasizing simplicity and reliability as weapon goals requires us to face squarely the second. Given these two steps, the decision process must be revised to take advantage of the potential for more rapid developments."

Even though some delay has been experienced in completing actions at the component (Service) level, new policies for initiation of new programs are now in effect. There have been three key DOD policy documents issued that implement Circular A-109.

The first of these documents is DOD Directive 5000.30, "Defense Acquisition Executive",[Ref. 7] which was issued on August 20, 1976. This document establishes the new organizational position within the Office of the Secretary of Defense (OSD) of Defense Acquisition Executive (DAE). The DAE, discussed later in this section, is now the principal advisor and staff assistant to the Secretary of Defense (SECDEF) for the acquisition of defense systems.

The Honorable Dale W. Church, Deputy Under Secretary of Defense (Acquisition Policy) stated the following in an address at the U. S. Naval Postgraduate School [Ref. 56]:

> "The reorganization of the Office of the Secretary of Defense now being implemented...was motivated to a large extent by the policy promulgated in OMB Circular A-109 which among other things directs executive departments and agencies to concentrate major responsibility for systems acquisition under a single departmental authority or acquisition for DOD research, engineering and acquisition activities has been consolidated under an Under Secretary of Defense for Research and Engineering and the incumbent, Dr. William Perry, has been designated the DOD Acquisition Executive. To carry out his functions, Dr. Perry has given each of his Deputy Under Secretaries the additional responsibility for the production phase of weapon systems acquisitions, thereby integrating with the research and development function those specific production activities previously carried out in the I & L organization. My position as the Deputy Under Secretary for Acquisition Policy was created to consolidate all of the acquisition policy functions, including procurement, production and standardization ...I believe the close relationships created by this reorganization among all the elements involved in acquisition at the OSD level will have a positive impact throughout the Department of Defense and defense industry."

The second and third key documents were approved by former Deputy Secretary of Defense William P. Clements on January 18, 1977. DOD Directive 5000.1, "Major System

Acquisitions" [Ref. 5], redefines a major system and establishes the major milestones and phases of defense acquisition systems. DOD Directive 5000.2, "Major System Acquisition Process" [Ref. 6] establishes the Mission Element Need Statement (MENS) and the Decision Coordinating Paper (DCP) as the decision recording documents. DOD Directive 5000.2 also re-establishes the Defense Systems Acquisition Review Council (DSARC), and in certain cases the (Service) Systems Acquisition Review Council (S)(SARC), as the decision review body.

These key DOD documents replace the previous DOD Directive 5000.1, "Acquisition of Major Defense Systems," December 22, 1975, DOD Instruction 5000.2, "DOD DCP and DSARC", January 21, 1975 and DOD Directive 5000.25, "DSARC", January 21, 1975.

B. CHANGES TO THE DEPARTMENT OF DEFENSE ACQUISITION POLICIES AND PROCEDURES

The major impact of principal changes in the new key DOD Directives has been in three areas of the DOD Major System Acquisition process. These three areas are:

- -New organizational positions and roles with the establishment of the Defense Acquisition Executive and the clarification of the program manager's function.
- -Restructuring the "Front-end" of the DOD Acquisition Life Cycle with the requirement that needs rather than hardware systems be identified at the start of a new acquisition system by means of the MENS.
- -Movement toward decentralization of decision-making by the establishment of (Service) System Acquisition Review Councils (S)(SARC).

1. New Organizational Positions and Roles

The first area of principal change is in the new organizational positions and roles. DOD Directive 5000.30 [Ref. 7] establishes the charter for the Defense Acquisition Executive (DAE). The DAE has a key DOD position as the principal advisor and staff assistant to the SECDEF for the acquisition of defense systems and equipment. The DAE is the focal point in management of the Major System Acquisition process and performs the following functions:

(1) Integrates and unifies the management process, policies and procedures for defense system acquisition.

(2) Monitors the implementation of the policies and practices in OFPP Circular A-109 and in the system acquisition policies of the SECDEF.

(3) Coordinates the development of acquisition investment planning for the DOD to assure the continuity of decisions among various life cycle phases.

(4) Serves as Chairman of the DSARC.

(5) Advises the SECDEF on the timing of program manager assignment, on the adequacy of the program management structure and on the quality of the program management achieved.

In addition, the DAE:

(1) Coordinates the actions of the various OSD offices as they carry out their assigned responsibilities in major weapon system acquisition.

(2) Coordinates actions with the DOD Components that have collateral or related functions.

(3) Maintains active liaison for the exchange of information and advice with the DOD Components.

(4) Consults with the Joint Chief of Staff on the interaction of system acquisition with operational strategy.

(5) Maintains active liaison with the OFPP in matters concerning system acquisition policy.

(6) Promotes the maintenance of active liaison with appropriate R&D, system design, procurement, logistic and environmental service agencies outside the DOD, including private business, educational or research institutions or other agencies of the government.

Previous to Circular A-109, neither DOD nor the Services had an acquisition executive. The responsibility for making policy and monitoring acquisition programs had been split between the technical, logistics and business functions at top DOD and individual Service levels. This split in authority between the R&D and procurement policy staff functions made it difficult to correlate changes in acquisition policies, monitor implementation of the separate policies, or determine the ultimate results of the policies.

Before, the Director, Defense Research and Engineering, (DDR&E) developed overall acquisition policies and the Assistant Secretary of Defense (Installations and Logistics),

(ASD(I&L)), issued policy in the form of regulations. These regulations set policy for all DOD procurement including some aspects of major system contracting. The acquisition policy for program implementation was split between ASPR and DOD directives and this split existed in the monitoring and the DSARC decision process. DDR&E chaired DSARC I and II and ASD(I&L) was the chairman of DSARC III. As a result of this split, the problem of discontinuity existed and there was duplication of responsibilities, layering and management overstaffing which occur below the top levels of DOD and Service components.

The establishment of the DAE to have overall responsibility for coordination of acquisition policy should act to unify the DDR&E and ASD(I&L) roles in the acquisition process.

The SECDEF designated Dr. William J. Perry, then Director, Defense Research and Engineering (DDR&E), as the DAE.

Although the Program Manager's organizational position has not been changed, his function and authority has been further strengthened through restatement in the new Directives. The Program Manager retains a key management role in DOD. Assignment of the Program Manager is now required to be made following the first SECDEF decision point (Milestone 0). The tenure for a Program Manager is more explicitly stated. For example, following his assignment at the first SECDEF decision point, the Program Manager shall not normally be relieved until after the second SECDEF decision

point. The varying talents required of a Program Manager for different program phases are now called for in the consideration and selection of Program Managers. The impact of the line and staff elements upon the Program Manager has been discussed before in the Acquisition Advisory Group (AAG) Report [Ref. 57], the Army and the Navy Material Acquisition Review Committees (AMARC & NMARC)[Refs. 16 and 17]. The restatement of the Program Manager's function and authority in the new Directives is to reduce the program perturbations by line and staff elements at whatever level they reside. Now decisions by line officials above the Program Manager that direct or cause program changes must be documented. This could prove to be one of the more controversial changes in the new Directives.

The new Directives also call for a change in the traditional organizational roles. A simplified interpretation of the redefinition of the roles of the various organizations involved in the DOD Major Systems Acquisition process is given in Figure 10. The DOD components (Services) must reorient their traditional roles as product or hardware advocates and begin to identify and articulate needs based upon mission deficiencies. This will be a significant change for the Services and their solution-oriented organizations.

The government laboratories have traditionally been involved in defining hardware solutions to be produced by industry. Now the laboratories are tasked to develop and maintain a technology base in support of their service's missions and are also assigned the responsibility of

ORGANIZATIONAL ROLES UNDER A-109

	TRADITIONAL ROLE	A-109 ROLE
SERVICE	HARDWARE ADVOCATE	IDENTIFY AND ARTICULATE MISSION DEFICIENCIES
LABORATORIES	TECHNOLOGY/HARDWARE ADVOCATE	MAINTAIN TECHNOLOGY BASE; PARTICIPATE IN EVALUATION OF SYSTEM ALTERNATIVES
OSD	APPROVAL/DISAPPROVAL OF SPECIFIC PROGRAMS	APPROVAL OF MISSION NEED
CONGRESS	DETAILED REVIEW OF INDIVIDUAL BUDGET LINE ITEMS	REVIEW BUDGET REQUESTS ON MISSION NEED BASIS
INDUSTRY	PROVIDER OF RESOURCES TO BUILD HARDWARE IN RESPONSE TO GOV'T SPEC.	RESPOND WITH SYSTEM ALTERNATIVES

Fig. 10 [REF. 58]

assisting in the evaluation of system alternatives to be proposed by industry. The OSD, instead of merely approving or disapproving specific hardware solutions, will now review and approve the basic mission needs as well at each key decision point (Milestone).

As discussed in Section III, the Congressional role should shift from the micromanagement of specific program through detail review of individual budget line items to the higher order function of authorization and appropriation of budget requests on an agency need basis; involving Congress with the threat, mission deficiencies and program purpose and goals. Industry, instead of being constrained to respond to rigid hardware specifications, will now be asked to respond to a broad statement of mission need. The alternative system design concept responses of the competing industry contractors will be evaluated to identify those solutions that satisfy the approved mission need. The improvements in the DOD Major System Acquisition process called for by Circular A-109 can not occur without implementation of these redefinitions of organizational roles.

2. Restructuring of the Front-End Process

The second major area of change resulting from the issuance of the new DOD Directives implementing Circular A-109 is the restructuring of the "front-end" of the DOD Major System Acquisition process. As Mr. Dale Church stated in Ref. 56:

> "One of our DOD policies and actions to improve the acquisition process...we are giving much more attention

> to the "front end" of the acquisition process. As directed by OMB Circular A-109, the mission needs are being defined and evaluated more critically, and a wider range of technologies to meet that need, quickly and efficiently--both in terms of performance and cost are being considered. At the same time, design and logistic support planning which will permit us to bring acquisition and life cycle costs into more affordable bounds are being thoroughly reviewed. Because the major portion of our total weapon system acquisition and support costs are essentially determined during the conceptual stages of the acquisition aprocess, I believe that this new thrust in evaluating front end tradeoffs will correct a number of problems that have historically plagued us. Properly followed, the process can prevent acquisition of ill defined systems, minimize inaccuracies in cost and schedule estimates, and reduce operation and support costs as systems are fielded."

The area of major change in DOD covers activities prior to Full-Scale Engineering Development Phase. The new DOD Directives add a new SECDEF decision point, Milestone 0, for program initiation. The four key agency head decision points called for in Circular A-109 have now been incorporated as the four key SECDEF decision points called for in the new DOD Directives and are presented in Table III.

TABLE III

Circular A-109 Decision Points	SECDEF Decision Points	Designation
1	Milestone 0	Program Initiation
2	Milestone I (DSARC I)	Demonstration and Validation
3	Milestone II (DSARC II)	Full Scale Engineering Development
4	Milestone III (DSARC III)	Production and Deployment

These four key SECDEF decision points are overlaid on the Circular A-109 Major System Acquisition Cycle in Figure 11, [Ref. 4].

The Pre-Milestone 0 activities are concerned with mission area analysis in the various segments of the Defense mission. This evaluation may be a service initiative as a result of a perceived deficiency or threat or may be requested by SECDEF. The analysis of the mission areas will identify mission needs and state those needs in terms of operational tasks to be accomplished rather than in terms of hardware performance or characteristics. After this analysis identifies a mission element need, the service will prepare the Milestone 0 decision recording document, a Mission Element Need Statement (MENS).

The MENS is a new document for DOD, established in the new DOD Directive 5000.2, and corresponds directly with Circular A-109's Mission Need Statement. The MENS, limited to ten pages, is used to describe a mission and justify the initiation of a new Major System Acquisition.

First, the MENS presents mission information by identifying the mission area, by describing the need and mission element in terms of the job to be done in a specified time period, and by defining the threat situation including quantified threat data in types, numbers and capabilities and source of intelligence information. Second, the existing DOD capabilities to accomplish the mission are evaluated, not from a single service view, but from a

MAJOR SYSTEM ACQUISITION CYCLE

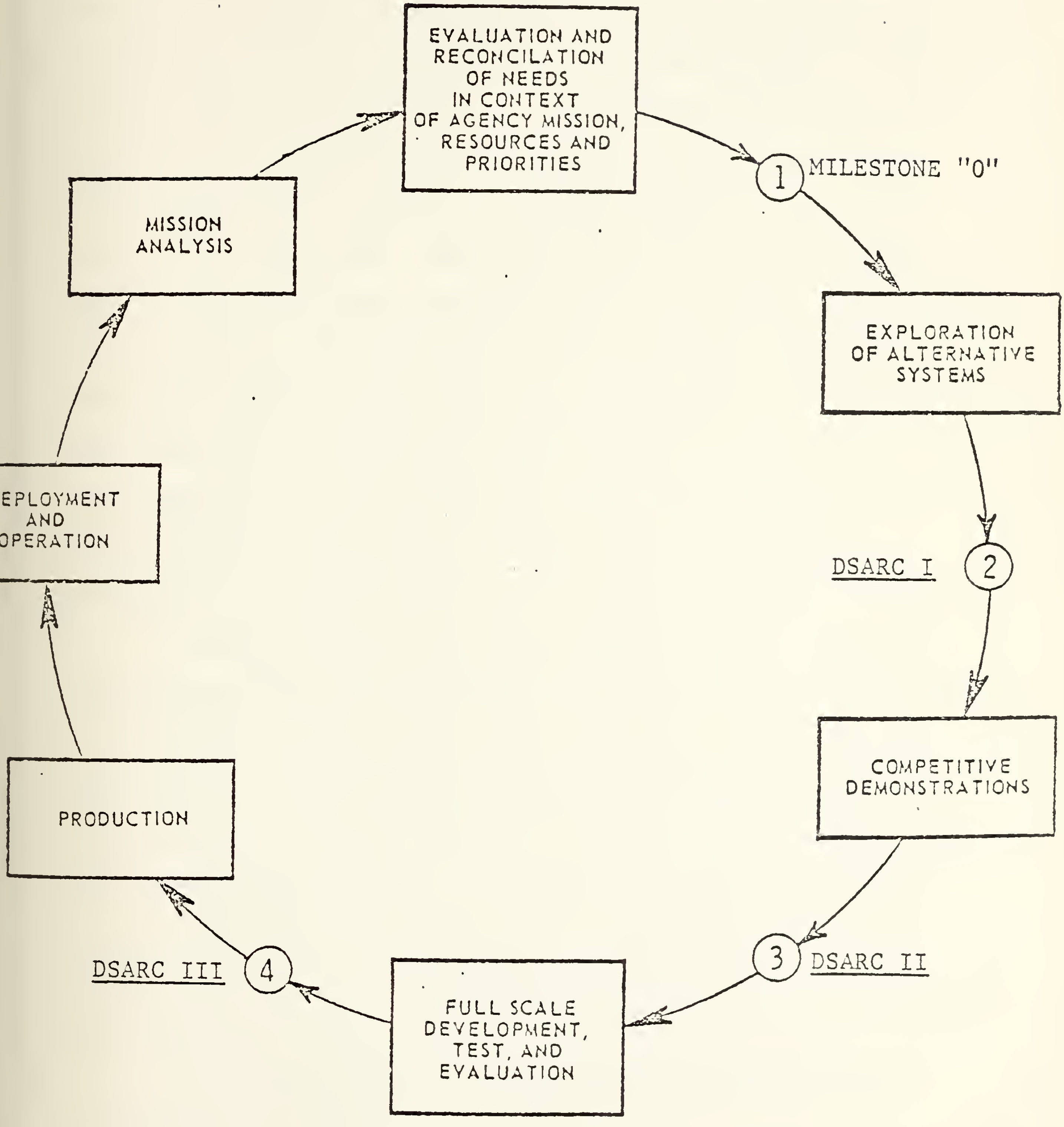

EVALUATION AND RECONCILATION OF NEEDS IN CONTEXT OF AGENCY MISSION, RESOURCES AND PRIORITIES
1
MILESTONE "0"
EXPLORATION OF ALTERNATIVE SYSTEMS
2
DSARC I
COMPETITIVE DEMONSTRATIONS
3
DSARC II
FULL SCALE DEVELOPMENT, TEST, AND EVALUATION
4
DSARC III
PRODUCTION
DEPLOYMENT AND OPERATION
MISSION ANALYSIS

Fig. 11 [REF. 4]

summary of DOD and allied capability. Also, the cost to acquire and operate the existing DOD capability is included.

Third, the assessment of the mission need is presented in terms of a deficiency in the existing capability, a projected physical obsolescence or a technological or cost savings opportunity. Next, the known constraints are stated as they apply to any alternative solutions including cost limits placed on investment to acquire the solution needed (not a cost estimate), limits placed on operating cost over the life of the system, operational and logistics considerations, manpower factors, requirements for NATO standardization and interoperability, and timing of need (all of which are considered as boundary conditions for the exploration of acceptable solutions). Then, the impact of staying with the present capability and not acquiring a new solution is assessed from operational, logistics and cost points of view.

Finally, in the MENS, the program plan to identify and explore competitive alternative systems extending through to Milestone I is provided. This plan includes the assignment of the Program Manager, establishing whether the system program office will be single or joint service, the projected program manpower, funding and schedule through to Milestone I, the approach to solicitation for alternative design concepts and to contracting, and the potential areas of technology to be explored, if known.

A proposed Mission Element Need Statement outline is presented in Appendix I.

The Milestone 0 decision point is reached with the submission by the Services of the MENS to SECDEF. Milestone 0 activities do not involve a DSARC review. Rather, the Service Secretary, working through the Defense Acquisition Executive (DAE), coordinates with the OSD staff and the Office of the Joint Chiefs of Staff (OJCS) and submits a coordinated package containing the MENS, OSD comments and a proposed action memorandum to the SECDEF for approval. In order for the program to proceed further, the SECDEF must approve the mission need and the reconciliation of this need with existing DOD capabilities, priorities and resources. The SECDEF also establishes program constraints at this time. The SECDEF's approval of the MENS gives direction to one or more services to proceed with the identification and exploration of alternative systems to respond to the need outlined in the MENS.

Immediately following the SECDEF's approval of the MENS at Milestone 0, the Conceptual Phase is entered and the Services will assign a Program Manager who will then develop the program's acquisition strategy. The Program Manager will conduct a broad base competition for alternative concept solutions in response to the mission need. During the solicitation segment of the Conceptual Phase, competent industry and educational institutions will identify and explore solution concepts through the use of parallel, short-term system design concept contracts. During the evaluation segment of the Conceptual Phase, government in-house

technical organizations (such as government laboratories) will analyze the candidate solution responses and their characteristics, such as estimated cost, schedule, performance and support parameters and concepts. Upon selection of the preferred alternative design concepts and competing contractors by the Source Selection Evaluation Board, the Decision Coordinating Paper (DCP) is prepared by the Services and coordinated with the DAE and OSD. The detailed contents of a DCP is given in Ref. 6. As stated by Mr. Dale Church in Ref. 56:

> "The new source selection directive is a major step toward improving our way of doing business with industry while lowering the cost of acquisition and ownership. It directs that development awards will be made based upon the inherent production and support costs of the proposed system--not primarily on the proposed development program cost. The directive recognizes that even though we in the Department of Defense have the responsibility to provide the 'requirements' framework for our new systems, industry's hands can't be tied if we truly want lower cost systems. Therefore we encourage contract change recommendations (even during the bidding process) if they are cost effective. The new source selection directive also establishes a test of the four-step source selection process which is designed to improve the quality of the process and to eliminate or reduce program technical leveling, buy-ins and auctioning. Seventeen service programs are being used in this test which is scheduled for completion by 31 December 1977."

Once the DCP has been prepared and submitted, the Milestone I (Demonstration and Validation) decision point is reached. The program review process begins with an evaluation of the DCP by the Service System Acquisition Review Council ((S)SARC) and the Service Secretary. If agreement is reached, the DCP is sent to the Defense System Acquisition Review Council (DSARC) for review and referral

to SECDEF if so designated. One change to the DSARC I procedure is the recommendation made by the DSARC as to whether the DSARC should continue to review the program at future Milestones or whether the (S)SARC should act for the DSARC. The results and recommendations of the DSARC are then forwarded to the SECDEF. If SECDEF is in agreement with the DSARC finding, he reaffirms the mission need and signs the DCP giving the Service(s) approval to carry the program into the Demonstration and Validation Phase.

During the Demonstration and Validation Phase, the program office will again use short-term, parallel contracts to refine the selected alternatives through extensive study and analyses, hardware development, test and evaluations. The objective in the phase is to reduce technical risk, validate the selected solutions and provide the basis for determining whether or not to proceed to Full-Scale Engineering Development Phase.

Beginning with the Milestone II (Full-Scale Engineering Development) decision point, the specified phases of program activity and decision points remain much the same as prescribed by previous policy guidance. A detailed explanation of the remaining phases and decision points is given in Ref. 6. Figure 12 depicts the DOD Major System Acquisition process with the front-end changes called for in the new DOD Directives.

3. Decentralization

One of the most significant opportunities for change as a result of the new DOD Directives implementing Circular

MAJOR SYSTEM ACQUISITIONS

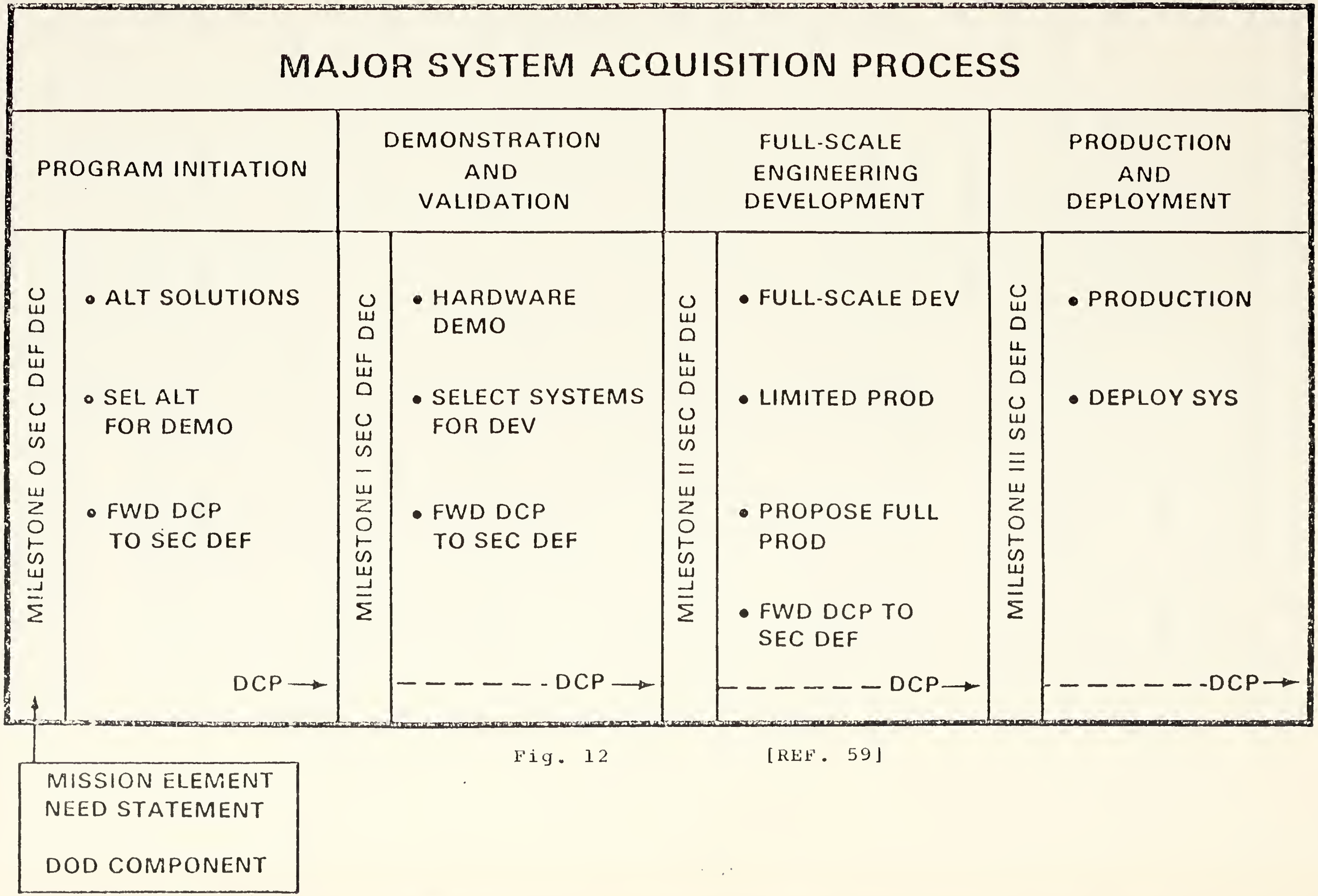


Fig. 12 [REF. 59]

A-109 is the potential for decentralization of the DOD review functions. The need for decentralization in decision-making has been a continuing issue in DOD. The current thrust for decentralization is an outgrowth of various Service and OSD studies [Refs. 15, 16, and 57], and a simple need to reduce the load on the Program Manager of too many program reviews. There are three areas where decentralization can now be accomplished.

First, the potential for increased decentralized management is promoted by the formalization of the Service System Acquisition Review Councils ((S)SARC) as an acknowledged review council. Chaired by the Service Secretary or Under Secretary and similar in composition and operation to the DSARC, the (S)SARC's will review all Major System Acquisition programs at Milestone I, II and III. The (S)SARC review results and DCP will then be made available to the Service Secretary for his submission to the DAE, Chairman of the DSARC, for DSARC action or directly to SECDEF at Milestone II and III for those selected programs for which DSARC reviews have been waived by the SECDEF. Additionally, there is a proposed provision for a waiver by SECDEF of DSARC review for any program at any Milestone point. The potential of limiting the number of DSARC reviews through reliance on the Service Secretary and (S)SARC management activities can greatly contribute to decentralization of Major System Acquisition management.

Second, there is now a formal requirement for a Service and OSD planning meeting prior to preparing a DCP

for a Milestone decision. The Service will now issue the "For Comment" and "For Coordination" drafts of the DCP to OSD. After the development of the basic DCP draft, OSC inputs are now formally solicited and provided through a single focal point, the DAE, prior to the (S)SARC. Over the past several years, the DCP process has been severely stagnated on both sides of the Service and OSC interface with the result that it has been necessary to engage top level principals to stimulate the process into functioning. One of the DAE's most useful functions will be in the filtering of OSD comments and issues in response to a Service "For Comment" circulation of a DCP. This should help to minimize new major program issues being raised in the DSARC forum. These actions will require a thorough preparation by the Services prior to a Milestone decision point and will require OSC to formally raise issues with the Services prior to making their program recommendations to the SECDEF. Thus, the Service Secretary should now have the same set of inputs as does the SECDEF, making his recommendations to SECDEF more knowledgeable, stronger and influential. The net effect can be decentralized program management for the Services with greater internal program control and less external perturbation.

Third, as discussed previously, the strengthening of the designated Program Manager's authority to achieve a set of approved program objectives within documented and agreed-upon constraints could enhance the movement toward decentralization of decision making in the Major System Acquisition process.

C. STATUS OF IMPLEMENTATION

The Department of Defense was the first of the 19 Federal agencies to submit Circular A-109 implementation plans to OMB and OFPP in August 1976. In an interview [Ref. 52], Mr. Fred Dietrich, OFPP, stated that, while DOD's implementation plan was "responsive", he felt it was "incomplete" for two reasons. First, "the plan did not describe how the implementing instructions would cascade down through the Services to the command organizations and to the field activities. Just issuances of directives is not implementation." Second, there was "no provision to train and orient people down at the field level. Some people feel that is why the old 5000.1 and 5000.2 are not fully implemented today." Mr. Dietrich stated that while he was "not fully happy" with the two DOD documents, (the new DOD Directives 5000.1 and 5000.2), they were responsive and he felt that "it was better to issue them than to wait." He also stated that it might have been better to "just reference Circular A-109 and talk about how to manage and staff within the Agencies. This is what some Federal Agencies have done."

On January 18, 1977, DOD Directives 5000.1 and 5000.2 [Refs. 5 and 6] were issued. Subsequent changes to remaining policy documents concerned with DOD Major System Acquisition are in process. Training programs are in the process of being established to familiarize DOD personnel with Circular A-109.

Top level DOD managers already require that a MENS will be prepared for selected programs and that all new Major

System programs will follow Milestone 0 procedures. The Congressional interest in thepresent status of these programs is given in Appendix H and J.

As stated in Section IV. A., Dr. William J. Perry, the new Under Secretary of Defense for Research and Engineering, remains the designated DAE. Dr. Perry served as the first DAE, as specified in DOD Directive 5000.30 [Ref. 7], in his old position as Director, Defense Research and Engineering (DDR&E).

The Honorable Dale Church in a recent interview [Ref. 60] stated that his office was in the process of updating and combining the new DOD Directives 5000.1 and 5000.2 [Refs. 5 and 6] into one document. Mr. Church said that at this time he had no proposed date for issuance.

While all of the implementation discussion has centered on "Major" systems, it should be noted that the DOD Directives apply to all systems acquisitions. As noted in paragraph II. B. of DOD Directive 5000.1 [Ref. 5], "the management of systems programs not designated as major systems acquisitions will be guided by the provisions of this Directive." The Program Memorandum, which was previously used to support OSD review and decision-making process for "non-Major" systems, is not mentioned in the new DOD Directives. The Program Memorandum was essentially the same as the DCP but was used for programs which though important may not have fully met the criteria of the old DOD Directive 5000.1 as a Major program warranting a DCP. Not only is Program

Memorandum not mentioned in the new DOD Directives but no new directives have been issued to cover the use of the Program Memorandum.

The Services are in the process of preparing internal policies and procedures implementing DOD Directives 5000.1 and 5000.2. At the present time, the Navy's SECNAVINST 5000.2, the Army's AR 1000-2, and the Air Force's AFR 800-2 are all being rewritten. Once these regulations and instructions are reviewed and approved, the next level of regulations and instructions must be updated. Early Winter 1977 is now forecast to be the earliest date of issuance of these documents.

The Service System Acquisition Review Councils ((S)SARC), although established prior to the issuance of DOD Directive 5000.2 [Ref. 6], are formally implemented in the DOD Major System Acquisition process. Previous Service instructions and regulations (Navy's SECNAVINST 5420.127A, Army's AR 15-14, and Air Force's SAF Order 20.6) are now expected to be updated to conform to Ref. 6.

V. DEPARTMENT OF THE NAVY IMPLEMENTATION OF CIRCULAR A-109

In this section, the impact of Circular A-109 implementation within the Department of the Navy is examined. The Navy's organizational structure for system acquisition is presented. The resulting changes of the new DOD Directives [Refs. 5 and 6] to Navy acquisition policy and procedures is investigated along with the incorporation of these changes.

A. ORGANIZATION STRUCTURE FOR ACQUISITION

The acquisition management structure of the Office of the Secretary of the Navy (OSN) is similar in organization to the Office of the Secretary of Defense (OSD) discussed in Section IV. The component head is the Secretary of the Navy (SECNAV), the Honorable W. Graham Claytor, Jr. He has overall responsibility and control for the acquisition policies of the Navy. Assisting the SECNAV in acquisition management are two Navy Acquisition Executives (NAE) whose functions are similar to those of the Defense Acquisition Executive (DAE) discussed in Section IV. The Assistant Secretary of the Navy (Manpower, Reserve Affairs and Logistics), the Honorable Edward Hidalgo, is responsible for the coordination of ship acquisition programs while the Assistant Secretary of the Navy (Research, Engineering and Systems), the Honorable David E. Mann, is responsible for the coordination of all other Navy acquisition programs.

The Chief of Naval Operations (CNO) and the Commandant of the Marine Corps (CMC) are responsible for identifying operational needs and for determining characteristics and defining requirements to meet their respective needs. The CNO and the CMC, along with the appropriate Navy Acquisition Executive, are responsible for advising SECNAV with respect to Milestone decision points and management of Major System Acquisition programs. The CMC is authorized program management responsibility for systems developed by or produced for Headquarters, Marine Corps (HQMC). Provisions for transition of program management authority for systems developed and procured jointly by the HQMC and the Naval Material Command (NMC) are determined by joint agreement between the CMC and the Chief of Naval Material (CNM).

The CNM, under the CNO, is assigned the responsibility for the establishment, application and execution of program management within the Navy. While large programs (such as programs which involve more than one major area of naval warfare) report directly to CNM, other programs as designated by CNM, report to the Commanders of the Systems Commands (Sea, Electronic and Air). Upon chartering and designation, a Program Manager is responsible for the formulation and execution of plans for his specific program's system development and production. Organizational interrelationships are specified in each individual charter.

B. ANTICIPATED CHANGES TO DEPARTMENT OF THE NAVY ACQUISITION POLICY AND PROCEDURE

Navy implementation of the new DOD Directives [Refs. 5 and 6] will be set forth in the anticipated reissuance of the SECNAV Instruction 5000.1, "System Acquisition in the Department of the Navy" and the CNO Instruction 5000.42, "Weapon System Selection and Planning". The changes in policy, management and procedural guidance for Major System Acquisition contained in the new DOD Directives appear to be compatible with the present Navy acquisition process. The three areas of principal change proposed in the new DOD Directives and discussed in Section IV.B. (new organizational positions and roles, restructuring the front end of the life cycle, movement toward decentralization in program review functioning) have in part already been incorporated in the Navy and in part are anticipated in the reissuance of SECNAV Instruction 5000.1 [Ref. 61] and CNO Instruction 5000.42A [Ref. 62].

1. Organizational Positions and Roles

In the first area of principal change, new organizational positions and roles, the Navy has established the new position of Navy Acquisition Executive (NAE) as discussed earlier in this Section. The two NAE's are an effective focal point for the Major System Acquisition process within the Navy. As discussed later in this section, the NAE coordinates the various acquisition boards and documents, in particular the Navy Decision Coordinating Paper (NDCP) and the Navy System Acquisition Review Council (DNSARC), and

filters SECNAV comments and responses to the Office of CNO (OPNAV) and the Office of CNM (NAVMAT). Additionally, the NAE assists his DOD counterpart, the DAE, in feeding back OSD comments in response to a Navy "For Comment" circulation of a DCP. The NAE should serve as an effective buffer for OPNAV and NAVMAT against unexpected perturbations in the DNSARC and DSARC forums.

Additionally, the NAE should assist the Navy in implementing the new budgeting requirements of new DOD Directives. Now, Planning/Programming/Budgeting System (PPBS) actions which change documented SECDEF program decisions for Navy programs will have to be coordinated through the NAE and DAE. This does not mean that there will not be variations in the funding schedule as proposed in the DCP as long as such variations can be accomplished by the Program Manager without threshold breaches. Major changes in program funding schedule cannot be made without advising and consulting the SECDEF. This NAE and DAE coordination should reduce the incidence of staff PPBS action which change SECDEF decisions and should contribute to Navy program stability.

The line authority for Navy Program Managers discussed in the new DOD Directives, is expected to be reemphasized in the anticipated Navy Instructions. Previous program perturbations caused by non-line elements (OSD, OPNAV and NAVMAT staff elements) may be expected to be reduced. Only through an awareness and enforcement of this policy by all Navy elements will this proposed change be implemented.

With his designation immediately after Milestone 0, the Navy Program Manager will be the focal point for the program particularly during the Solicitation and Evaluation segments of the Conceptual Phase. The Program Manager will have to interface with OPNAV, NAVMAT and the Navy laboratories in developing and exploring alternative solutions. Another requirement for the Program Manager will be the initiation of action in reporting program variances (breaches or threatened breaches to thresholds or constraints). This action is to be initiated immediately upon occurrence instead of waiting for the DSARC forum.

The new organizational roles of OPNAV as discussed in Section IV. B. of identifying and articulating mission deficiencies vice being strictly hardware advocates could prove to be difficult to implement. Presently, both OPNAV and NAVMAT with its Systems Commands and government laboratories are organized along hardware or platform (Air, Surface, Sub-surface, Electronics) lines rather than mission areas (Sea Control, etc.). Some OSD officials have recently expressed doubts that the Navy can effectively implement this change based upon the present OPNAV and NAVMAT organizational structure [Ref. 60].

2. Restructuring of the Front-End Process

In the second area of principal change, restructuring of the front-end of the acquisition life cycle, implementation can be accomplished by modifications to the present Navy Major System Acquisition process. Identification of

Navy mission area needs is compatible with the existing issuances of the Operational Requirement (OR) document. Both the Technology Base and OR, which should form the basis for the preparation of the MENS, will now have to be written in terms of a mission need or capability rather than a predetermined hardware solution.

After approval of the MENS by SECDEF at Milestone 0 and entry into the Conceptual Phase, resources for exploration of alternative systems will now have to be programmed in advance. The Navy will have to ensure that R&D program funds are identified with specified mission areas. The requirement for the formal assignment and chartering of a Program Manager after Milestone 0 is a new although compatible change with the Navy procedure for generating a Development Proposal (DP) in response to an OR. Now, hopefully, the Program Manager will be provided adequate support earlier as an initial program action to develop the program acquisition strategy and to help manage the solicitation and evaluation segments of the Conceptual Phase.

After acceptable proposals to the mission need have resulted from the exploration of alternative system concepts, the Program Manager assists in the preparation of the DCP for SECDEF approval at Milestone I. After approving the selection of one or more concepts to enter the Validation and Demonstration Phase, SECDEF may now direct the Navy to proceed directly to Full Scale Development or Production Phases.

A change for the Navy during the Validation and Demonstration Phase is the requirement for a set of constraints as opposed to thresholds, within which the program is to be operated within that phase. Performance, cost and schedule estimates shall not be formalized at this time because the systems are not yet defined adequately.

A change for the Navy is that, in addition to approving one or more proposals to proceed into the Full Scale Engineering Development Phase, approval can now authorize the program plan up to full production. Now, the Milestone II approval includes long lead funding and limited production as well as the set of thresholds for performance, cost, and schedule parameters. The result of this change should be the elimination of the previous sub-Milestone decision points (DSARC IIA, IIB) by DSARC and OSD.

The Full-Scale Development Phase activities should remain essentially the same as previous operations.

At Milestone III, a single decision for full production and deployment to the operating forces is now possible. The effect of this change is to help eliminate the previous sub-milestone decision points (DSARC III, IIIA) by DSARC and OSD. Additionally, with the SECDEF Milestone III decision and approval of the DCP, the formal review process for a Navy program at DOD level is ended. The Navy will report quarterly to the SECDEF on program status and, as the program matures, the report periods should be lengthened and eventually phased out.

The Production and Deployment Phase activities should remain essentially the same as previously.

3. Decentralization

In the third area of principal change, the decentralization in program management and review functions, the formal establishment of the Service System Acquisition Review Councils by the new DOD Directives in the DOD acquisition process is compatible with the existing Navy System Acquisition Review Council (DNSARC). The formalizing of the DNSARC as an acknowledged review council combined with the SECDEF option of the permanent waiver of DSARC reviews at Milestone I for programs not in specified categories (such as joint strategic programs) and the SECDEF option for the waiver of DSARC review for any program at any Milestone point offers a significant improvement for Navy decentralization. The waiver of the DSARC and increased use of the DNSARC by SECDEF could result in reduced program review and increased program control for the Navy Program Manager.

C. INCORPORATION OF CHANGES

The incorporation of the proposed changes of the new DOD Directives and the anticipated changes in Navy Instructions for the Navy's Major System Acquisition process are now summarized.

The technology base called for by Circular A-109 and required by the Navy for its future systems is set forth in the Science and Technolgoy Objective (STO) [Ref. 62]

document, which describes in broad terms the Navy role and objectives anticipated in a particular warfare area in the 10-20 year future time frame. An Advanced Systems Concept (ASC) [Ref. 63] to propose future concepts emphasizing Navy mission needs is submitted by NMC to OPNAV. The STO and ASC form the basis for the inputs of the Technology Base. This Technology Base is then assessed in conjunction with the OPNAV perceived threat to formulate concise statements of operational (mission) needs. These statements of mission needs form the basis for the preparation of a draft MENS by OPNAV.

This draft MENS is then evaluated by the CNO Executive Board (CEB) [Ref. 64] or by one of the CEB's sub panels; the Ship Acquisition and Improvement Panel (SAIP) [Refs. 62 and 64] for CNO designated ship acquisition programs or the Acquisition Review Committee (ARC), [Ref. 62] for other CNO designated programs. For Major Systems, the CEB recommends to the CNO, for approval, the OPNAV prepared Mission Element Need Statement (MENS). This MENS, in turn, is coordinated through the NAE to the SECNAV for approval. The MENS is then coordinated through the DAE to SECDEF for his Milestone 0 decision point. Upon SECDEF approval, the MENS is sent back through SECNAV to CNO with permission to enter the Conceptual Phase.

CNO then issues the OR to be used by NMC and the Program Manager as guidance for the Conceptual Phase. The Program Manager then conducts the solicitation and evaluation segments of the Conceptual Phase. Upon identification and

selection of satisfactory alternative solutions to the mission need, CNM in coordination with the Project Manager prepares and submits to OPNAV a Development Proposal (DP) [Ref. 62] to present the alternatives and tradeoffs and to identify recommended proposals. Upon concurrence by CNO, the Navy Decision Coordinating Paper (NDCP) [Ref. 62] and for Major Systems, the Decision Coordinating Paper (DCP) [Ref. 6], is prepared and reviewed by the CEB and/or the SAIP or the ARC. The NDCP/DCP is then coordinated through the NAE to the DNSARC for review. Upon approval by the DNSARC and the SECNAV, the DCP (for Major Systems) is then coordinated through the DAE for review by the DSARC

Upon review and approval by SECDEF, at Milestone I, the DCP is sent back to CNO with approval for the program to enter the Demonstration and Validation Phase. Also, at Milestone I, the SECDEF may waive the DSARC program review requirement for future Milestone decision points and allow the DNSARC to report via the NAE and DAE to the SECDEF.

The remaining phases and Milestone decision points of the Navy acquisition process remain essentially the same as before the issuance of the new DOD Directives.

The documentation and review process discussed in this section is depicted in Figure 13.

DOCUMENTATION AND REVIEW PROCEDURE

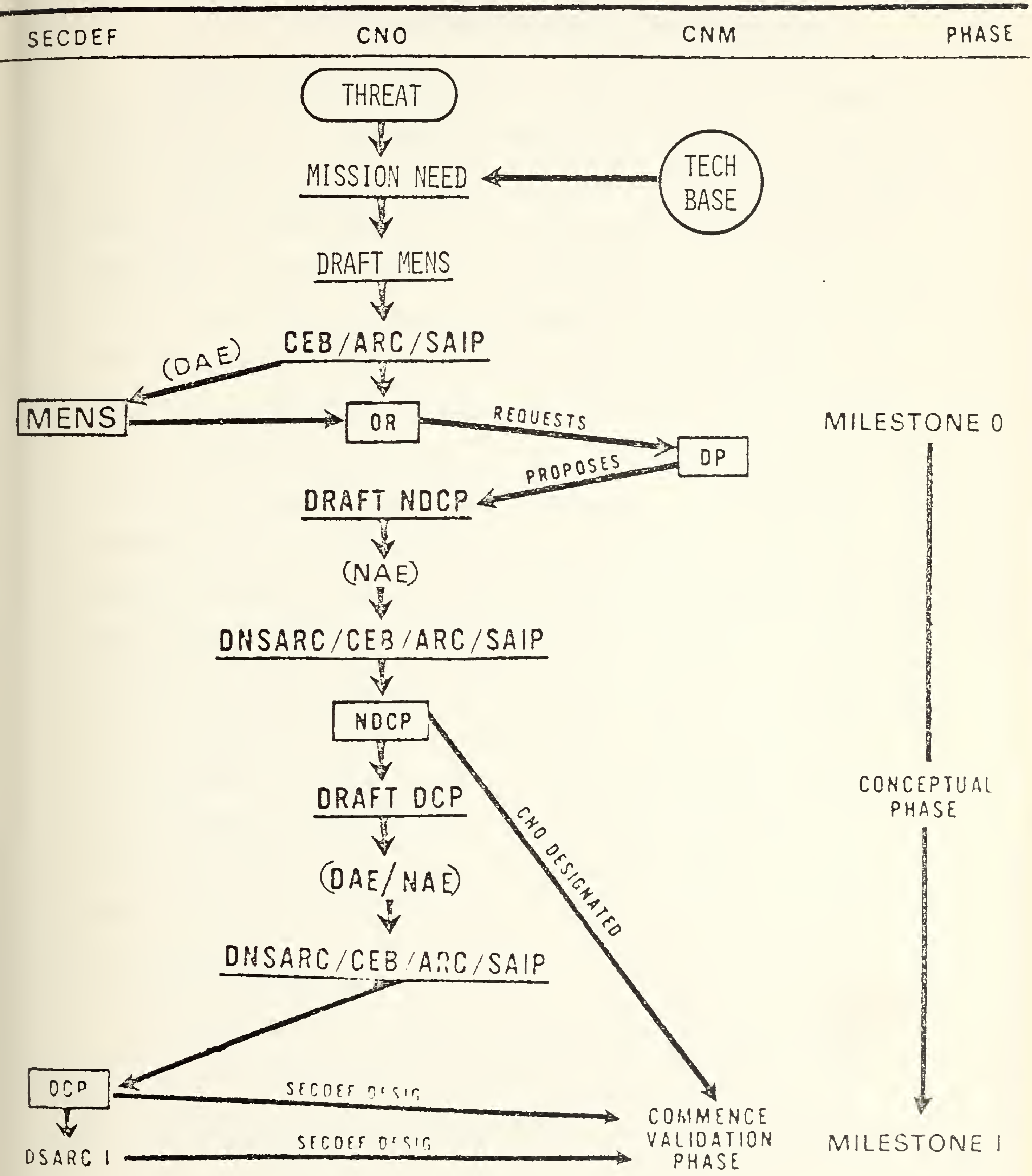


Fig. 13

VI. PROGRAM IMPLEMENTATION OF CIRCULAR A-109

In this section, the method used by one Navy program to implement the requirements of OMB Circular A-109 is presented. The Navy's Shipboard Intermediate Range Combat System (SIRCS) program is introduced as one of the first DOD programs to implement Circular A-109. The evolution of the SIRCS program, which in actuality preceded Circular A-109, is traced from its beginning to the present date, highlighting program initiation and structure, acquisition strategy, and operations in the solicitation and evaluation segments of the Conceptual Phase along with Congressional influences. The continued operation of the SIRCS Program under Circular A-109 is projected for the Validation and Full-Scale Development Phases. Some inherent Circular A-109 problems incurred by the SIRCS Program are investigated along with the critical requirements of the competitive concept formulation. The status of the SIRCS Program implementation is analyzed through a comparison of SIRCS Program acquisition strategy with the 12 applicable Commission on Government Procurement (COGP) recommendations presented in Section II.

A. SIRCS PROGRAM OVERVIEW

The Shipboard Intermediate Range Combat System (SIRCS) program was established to develop a new, generation shipboard system for the Navy to provide a balanced intermediate

range offensive strike and self-defense capability. SIRCS is to be a total combat system to provide Navy ships with the capability of engaging antiship missiles, high performance aircraft, high speed surface craft, ships and shore-based sites. It is to be an integrated, modular combat system for the mid 1985-2000 time frame that would have the system functions of detection, assessment/evaluation, command and control, engagement, and neutralization and assessment. SIRCS is to have a spectrum of platform capability from small patrol combatants through fleet escorts, major combatants, fast combat support and auxiliary ships to the large strike carriers. A graphic presentation of the SIRCS system capability is given in Figure 14.

The SIRCS Program is located in the Naval Sea Systems Command (NAVSEA) of the Naval Material Command (NAVMAT). Specifically, the SIRCS Project, designated PMS 404-40, is under the direction of the Anti Ship Missile Defense (ASMD) Project Office, PMS-404, of NAVSEA.

The period covering the SIRCS program initiation and Conceptual Phase, from mid 1974 to the present, parallels a period in which considerable policy changes occurred in the area of development and acquisition of DOD Major Systems as discussed in previous sections. The promulgation of the formal documents implementing these policy changes (OMB Circular A-109 in April 1976 and DOD Directives 5000.1/5000.2 in January 1977) did not occur until after the initial SIRCS planning. The SIRCS Project Office, through the use of

SIRCS

INTERMEDIATE RANGE
MULTI-MISSION,
MULTI-PLATFORM CAPABILITY

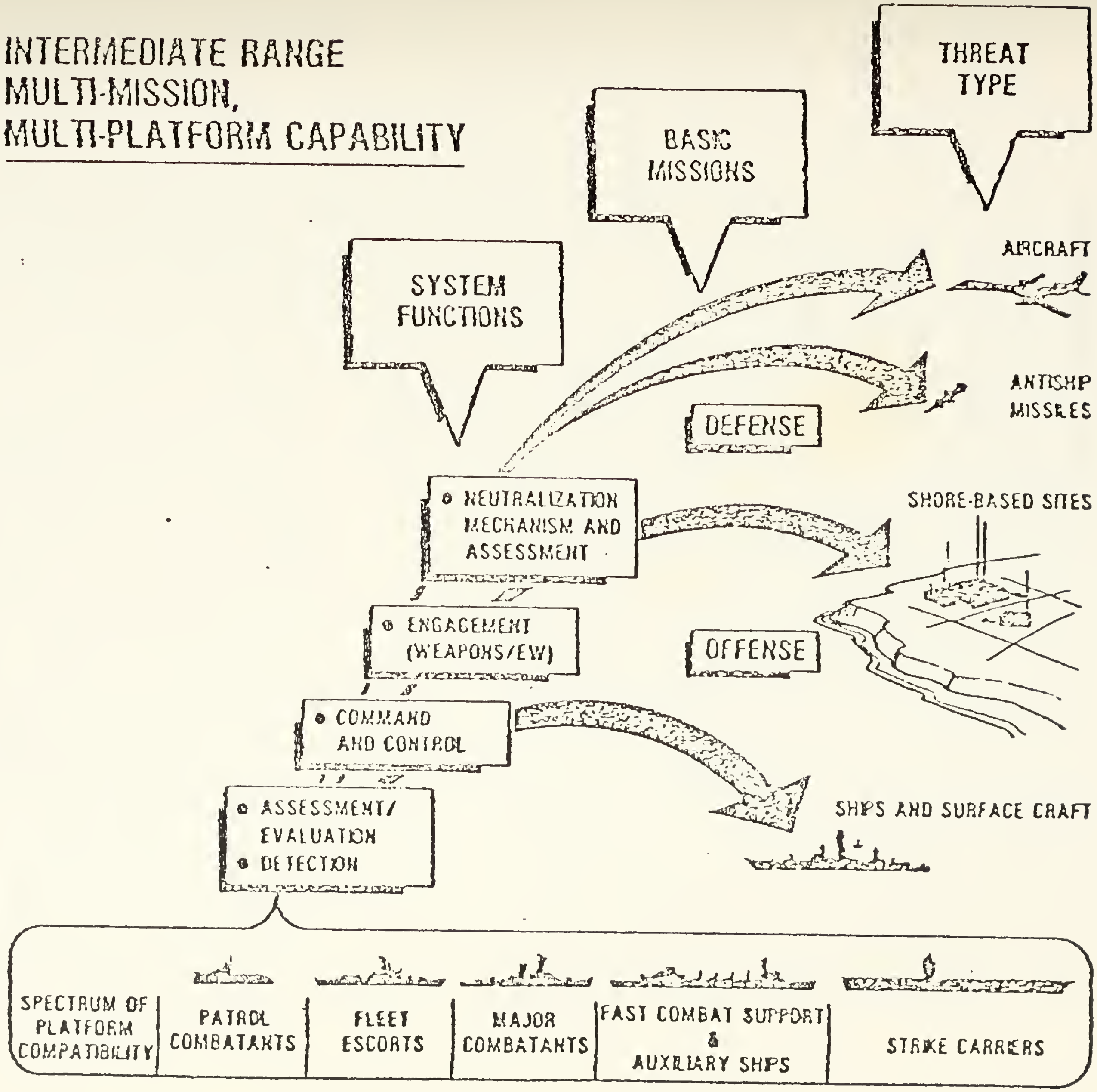


Fig. 14

Commission on Government Procurement (COGP) recommendations and interaction with OMB/OFPP and OSD, was able to anticipate the emerging policy direction.

Key SIRCS program characteristics to be discussed in this section include 1) Operational - a three-page user-oriented Operational Requirement (OR) document that stressed a modularized combat system approach and that represents an effort to overcome deficiencies of past optimized sub-system oriented developments; 2) Acquisition Strategy - use of competitive industry concept studies, sustained industry competition in future phases and integral government laboratory involvement with the program office; and 3) Use of COGP recommendations to influence the development strategy-compliance with COGP recommendations resulted in compliance with Circular A-109 principles.

B. SIRCS PROGRAM EVOLUTION

1. Initiation

In October 1974, an OPNAV review of surface warfare programs determined that there was duplicative development in on-going efforts. This resulted in a decision to merge the Advanced Anti-Ship Capable Missile (ASCM) Defense System and the Lightweight Intermediate Caliber Gun System (LICGS) developments into the SIRCS program. A number of lesser developmental efforts were also combined into the SIRCS program with the restructured effort to address the multi-dimensional threat in a more logical, integrated fashion.

2. Project Office

In April 1975, the ASMD Project Office (PMS-404) of NAVSEA was assigned responsibility for the development and acquisition of SIRCS, and the SIRCS Project Office was established. PMS-404 delegated a significant portion of his authority for planning direction and control of the program to the SIRCS Project Manager while retaining final approval authority. The SIRCS Project Manager serves as an interface between the participating field activities, system command divisions and directorates, contractor organizations and PMS-404.

One of the first courses of action the SIRCS Project Manager took was the establishment and organization of the SIRCS Project Office as shown in Figure 15. The SIRCS Project Office uses a matrix system of staffing with a small cadre of dedicated personnel supported by functional elements within the System Commands. One interesting facet of the SIRCS Project Office is the function of the Technical Planning and Advisory Board (TPAB). The TPAB supports and advises the SIRCS Project Manager in planning, tasking, and maintaining of system development. The designated members of the board are senior members of the government laboratory community with the authority to make resource commitments, and the authority and responsibility to assume accomplishment of tasks assigned to their organizations. A detailed breakdown of the government laboratories and centers supporting the SIRCS Project along with their principal and associate areas of responsibility is given in Appendix K.

SIRCS

PMS-404-40

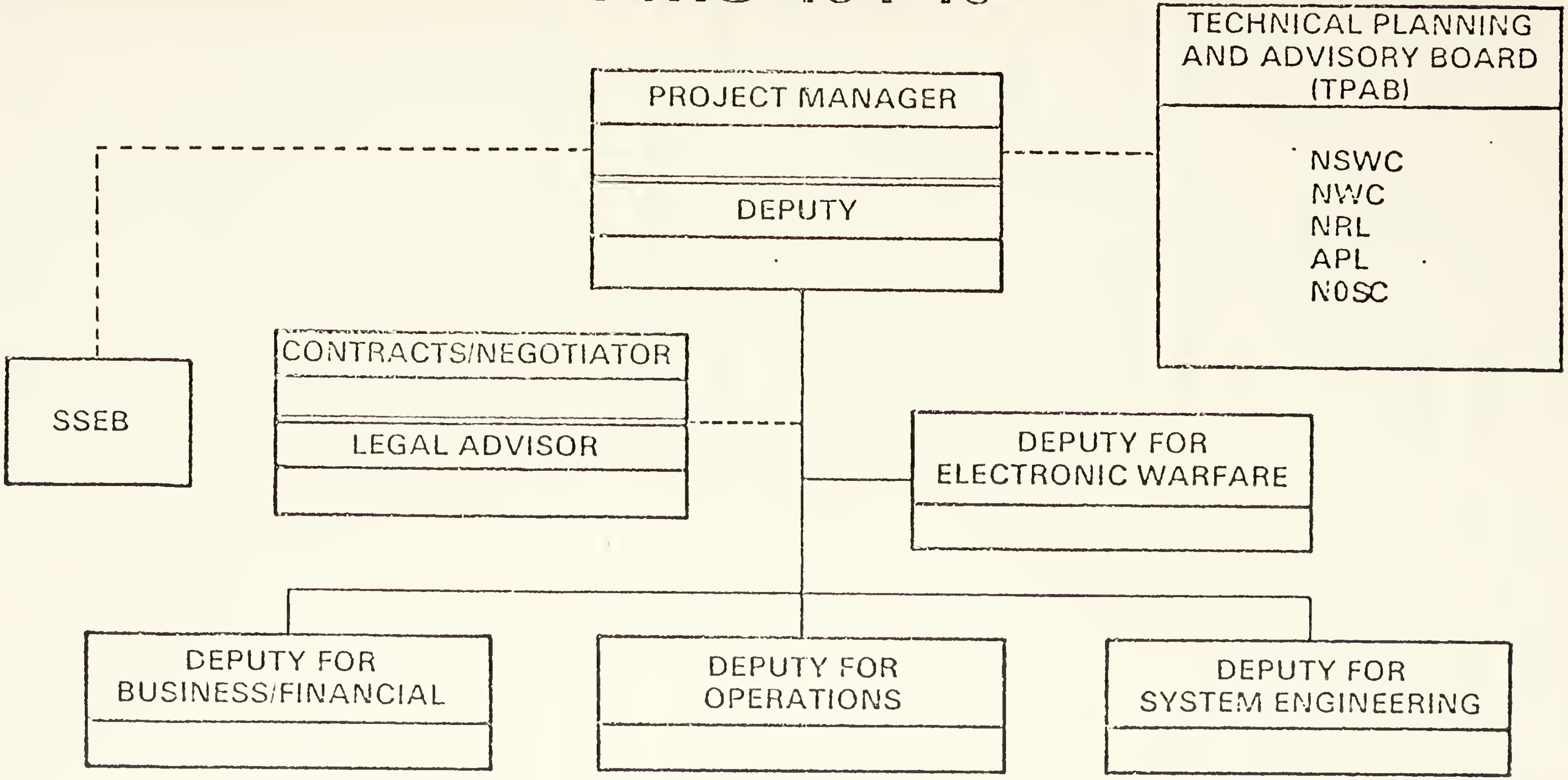

PROJECT MANAGER
DEPUTY
TECHNICAL PLANNING AND ADVISORY BOARD (TPAB)
NSWC
NWC
NRL
APL
NOSC
SSEB
CONTRACTS/NEGOTIATOR
LEGAL ADVISOR
DEPUTY FOR ELECTRONIC WARFARE
DEPUTY FOR BUSINESS/FINANCIAL
DEPUTY FOR OPERATIONS
DEPUTY FOR SYSTEM ENGINEERING

Fig. 15

A second interesting facet of the SIRCS Project Office is the Source Selection Evaluation Board (SSEB). The SSEB is an ad hoc group established to develop the criteria and methodology for evaluating the contractor deliverables resulting from the competitive concept formulation. The SIRCS Project Manager serves as chairman of the SSEB and is supported by a support and advisory staff. The Chairman is also supported by committees established to perform and plan the analysis for various evaluation factors (Technology, Integration, Military Factors, Management, Test and Evaluation, Support and Cost). The committees are chaired by headquarters personnel and consist of representatives appointed from the NAVMAT Systems Commands, other Navy and OSD Offices and Agencies, Navy Laboratories and support contractors. The SSEB function during the Evaluation Segment of the Conceptual Phase will be commented on later in this Section.

3. Operational Requirement

On May 21, 1975, the CNO issued the SIRCS Operational Requirements (OR) document (OR-SH-44), a three-page statement of mission need independent of a predetermined, hardware solution. The OR specified the mission capability required for an offensive and defensive combat system that could provide a total detection through engagement capability. System flexibility was proposed for a system to be modularly adaptable to the variations in ship platform size and constraints. The OR identified the nature of the threat variations and specified preliminary cost, performance and reliability objectives for the system.

Not only did the OR not specify a hardware requirement, it also did not specify a particular technical or conceptual approach. New developments were neither required nor desired unless significant benefits would result. The OR proposed integration with existing hardware with provisions for growth variants where feasible. The statement of requirement in the OR was tailored for the purpose of communicating to industry a very broad, but bounded, problem to which industry could respond with independently conceived concepts. This broad initial statement of mission need provided industry with the flexibility to perform its own tradeoffs and analyses, resulting in unbiased proposals.

4. Acquisition Strategy

Using the COGP recommendations for guidance and the OR for refinement, the SIRCS Project evolved the program acquisition strategy to be used throughout the program development. Five of the more important key elements of the acquisition strategy are as follows:

- The requirement definition was mission oriented, not hardware oriented. This is a key element in program initiation directly impacting on the response from industry. In the past, many programs eventually proved to be deficient because not enough attention was given initially to requirements definition.
- A spectrum of system level alternatives to satisfy the mission need was considered. Traditionally, programs have conducted studies to determine preferred sub-system hardware solutions to impose on industry

resulting in over-specified and costly systems.

- Early industry involvement in system development was conducted. The SIRCS Project issued a draft Request for Proposal (RFP) and Cost Analysis Guide to industry and to invite feedback comments for improvements to the RFP and conduct of the concept formulation. This rather novel approach resulted in a very beneficial improvements to the concept development process drawn from industry expertise not normally available to the program office. Additionally, the industry was involved earlier in the system definition by allowing the contractors to explore system possibilities through tradeoffs. For example, instead of the SIRCS Project specifying a specific detection probability, industry would be allowed to make performance and cost tradeoffs to determine the required capability in the total system context.
- The SIRCS acquisition strategy was designed to sustain industry competition as long as it is beneficial, having established the industry competition early in the conceptual phase. The SIRCS Project would continue to make incremental investments in the most promising alternatives through prototype shoot-off as the number of options is reduced. Throughout the development process, competition was to serve as the pacing factor in industry's concept proposals. The decision to use existing, modified, or new developments was to be

balanced between tradeoffs (cost, schedule, performance) and the competitive incentive toward economy in design activities.

- The government laboratory and technical community involvement is a keystone to the successful implementation of Circular A-109 in the SIRCS Program. The technical and managerial expertise of the government laboratories is needed to supplement NAVSEA and the SIRCS Project in the assessment of industry's proposals and in the test and evaluation of the candidate alternative systems. Additionally, the government laboratories would maintain the technology base called for in Circular A-109 and would interact with competing contractors in the dissemination of information.

As discussed in Section IV, this element of the acquisition strategy calls for an organizational role change for the government laboratories from their traditional role as a technology and hardware advocate. The SIRCS acquisition strategy discussed in this Section is in agreement with the principles of Circular A-109 and the new DOD Directives 5000.1 and 5000.2 even though developed by the SIRCS Project prior to the issuance of these documents.

5. Conceptual Phase Activities

After formulating the program acquisition strategy and in response to OR-SH-44, the SIRCS Project submitted to NAVSEA for approval an advanced procurement plan for a competitive Conceptual Phase with industry submitting alternative design concept proposals. The Navy then presented the

SIRCS Project to the Principal Director, Defense Research and Engineering (DDR&E) the Honorable Robert N. Parker, on August 14, 1975. As a result, DDR&E issued a memo on August 15, 1975, which permitted a briefing to industry and allowed the Navy to release the draft RFP. This memo required the Navy to present a program review to DDR&E and to prepare a draft Decision Coordinating Paper (DCP) before awarding contracts to industry. The action in meeting these two DDR&E requirements was in effect the receipt of OSD approval to proceed with the Conceptual Phase and was, in essence, the Milestone 0 decision point, as required by Circular A-109, for the SIRCS Project. Figure 16 indicates the SIRCS Project activities schedule for the Conceptual Phase.

The SIRCS Project next released a request to industry for letters of interest. On August 19, 1975, an industry briefing was held for 550 contractor personnel representing 213 companies and agencies. Briefing topics included: an overview of the SIRCS Program, the SIRCS OR (OR-SH-44) and the program acquisition strategy (as previously discussed in this Section); a program plan to use four competing contractors in the Conceptual Phase, two competing contractors in the Validation and Demonstration Phase, and one contractor in the Full Scale Development Phase; industry participation stressing the fact that, once selected, a contractor would be developing his own system from concept formulation to production; government laboratories-contractor interfaces emphasizing access to the technology base and information

CONCEPT FORMULATION PHASE

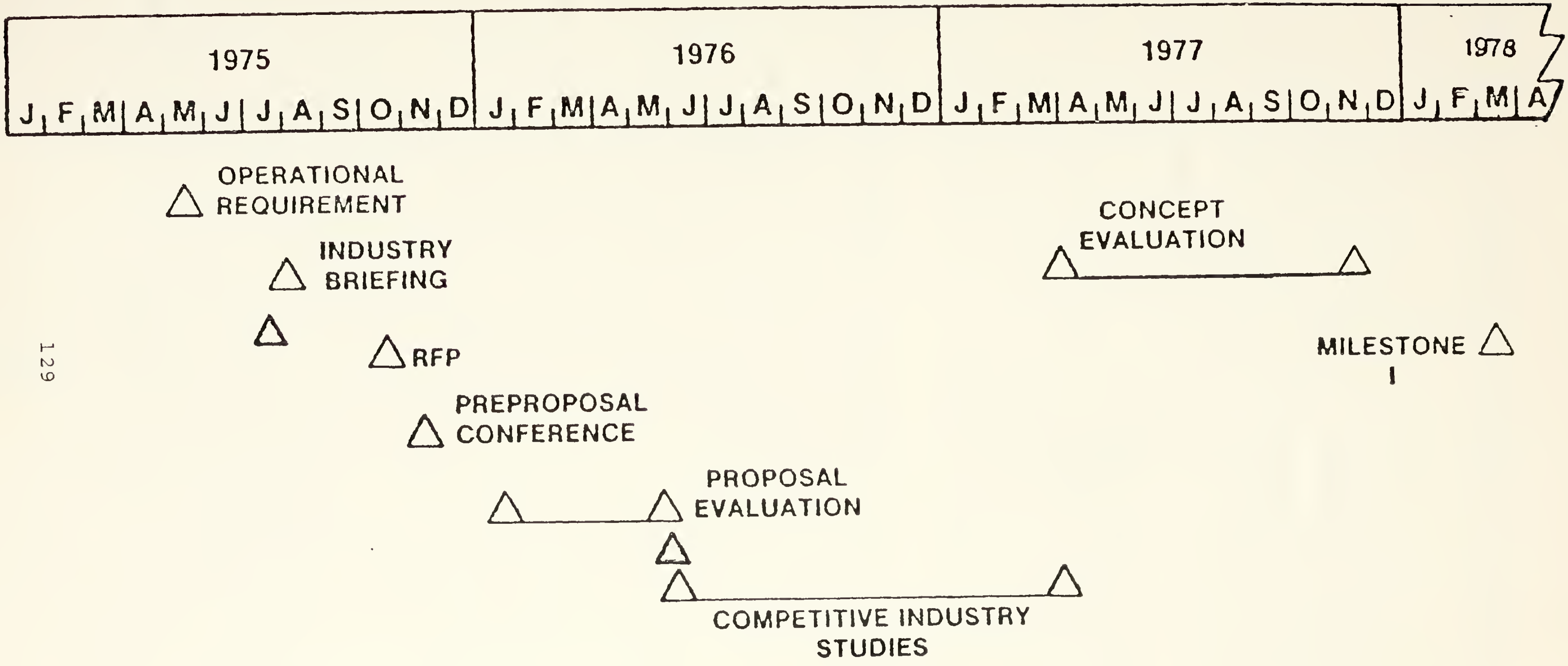


Fig. 16

△ – EQUIVALENT TO MILESTONE "0"

libraries; and a solicitation for industry feedback on draft copies of the RFP.

As a result of this solicitation for industry feedback, several beneficial comments regarding general application, proposal preparation instructions, and Concept Development Report (CDR) requirements were received and incorporated by the SIRCS Project Office.

On October 31, 1975, the SIRCS Source Selection Plan was approved allowing industry to compete to define SIRCS. On the same day, the RFP was released to 21 companies the Navy considered qualified. Key points contained in the RFP included:

- -Proposal Preparation Instructions which called for an understanding of the problem and study requirement and for an approach to doing a study to solve the problem and to response to the study requirement.
- -Evaluation and Award Criteria for both the Conceptual Phase and the Demonstration and Validation Phase which would be used to evaluate both the proposed approach to the study and the resulting concepts. This unique feature conveyed to industry the relative importance that the Navy placed on performance, cost and risk elements in concept proposals.
- -Procurement Strategy which called for up to four cost-type contracts to be awarded in the Conceptual Phase and two cost-type contracts to be awarded in the Demonstration and Validation Phase.

-Documents and Attachments containing the Concept Development Report (CDR) formal and abstracts of ten items of Government-furnished information (GFI) which was to be furnished at a later date. Part of the CDR called for a Demonstration and Validation Phase Proposal to be delivered at the conclusion of the Conceptual Phase. The Navy planned to require a proposal for the next phase at the end of each subsequent phase. The Navy could, therefore, continue further development of selected concepts without procurement delays through a series of carefully planned incremental investments.

-Description and Specifications which contained one of the unique features of this RFP - a one paragraph Statement of Work which simply read as follows [Ref. 58]:

> "...undertake an indepth study...to develop a system concept to meet the Operational Requirement for SIRCS and...develop a formal proposal to validate this system concept."

In response to the SIRCS RFP, seven contractors submitted proposals for evaluation. The offerors included General Dynamics, General Electric, Grumman, Hughes, McDonnell-Douglas, Radio Corporation of America (RCA), and Raytheon. On January 5, 1976, the SIRCS Project Office, assisted by previously discussed support personnel, began a four-month evaluation of the seven proposals for understanding of the problem and the approach to conduct the study to solve the problem. The award criteria favored those contractors who could produce a substantial portion of the system.

During the later portion of the proposal evaluation, the SIRCS draft DCP was distributed and reviewed by high-level Navy and OSD personnel. In April 1976, a revised draft DCP (DCP #163) was presented to OSC for comment before contracts were awarded, as previously required by DDR&E. The draft DCP contained the following [Ref. 27]:

- A description of the problem which led to SIRCS including the anti-ship missile, surface ship and shore threats; the anti-air warfare and anti-ship missile defense system limitations; and the surface strike warfare system deficiencies.
- An operational requirements section which stated the needs and goals independently of any system hardware.
- Recognition of the Navy as the agency component responsible for developing SIRCS.

As previously indicated, this submittal to OSD of the draft DCP combined with the previous DDR&E to proceed with the solicitation to industry constituted the SIRCS Milestone 0 decision point called for by Circular A-109.

In May 1976, as a result of the proposal evaluation, three separate, funded cost-type concept formulation study contracts were awarded to McDonnell-Douglas, Raytheon, and RCA. The nine-month contracts committed each contractor to develop an independent concept for a totally integrated system based upon its analysis of the requirements, existing development efforts and available or emerging technology. The SIRCS acquisition strategy had originally called for

the award of four concept formulation study contracts. Because of funding uncertainty (to be discussed later in this section) created by the House Armed Services Committee action on the FY-77 budget, the Navy deemed it prudent to award only three competitige contracts to stay within the anticipated funding constraints. The three selected contractor teaming arrangements and subcontractors are given in Appendix L.

It should be noted that attention was given by each of the three competing contractors to the use of North Atlantic Treaty Organization (NATO) country subcontractors.

In the course of the competitive industry studies, oral progress reviews by the contractors to the SIRCS Project Office were planned. Oral reviews were used instead of long, formal, written reviews to alleviate the administrative burden of the contractors. The reviews were planned to aid the contractors in individually evaluating their own progress and to provide insight into the study concept. This insight helped to prepare questions and to anticipate evaluation team expertise required for the different technologies to be analyzed in the concept evaluation segment.

To assist in bounding the requirements definition problem called for in the broadly defined operational need, each competing contractor was given three specific types of additional information. First, an Operational Requirement Expansion was provided which presented a spectrum of quantitative performance goals and thresholds providing a region

within which the contractor could perform tradeoffs. This OR Expansion has proved to be a cornerstone of Circular A-109 implementation. Second, the Navy provided baseline information so that each contractor could respond to the same set of defined constraints. This baseline information included threat and target parameters, environmental factors, expected platforms, 1990 fleet composition and weapon systems, composite scenarios and Navy test and evaluation resources. Third, a Cost Analysis Guide provided cost estimating guidance and assumptions, emphasizing Design-To-Cost (DTC) and Life-Cycle-Cost (LCC) concepts. This cost estimation guidance is critical for Circular A-109 implementation. Additionally, this information was supplemented by oral briefings on technology base programs and by the establishment of a GFI library containing over 2000 technical documents, study reports, and system manuals. A description of the Government-furnished information is given in Appendix M.

Contractor flexibility in specifying a preferred system concept was one of the main thrusts in the SIRCS competitive industry studies. The GFI documentation called for a commitment to a preferred system concept but emphasized that a detailed hardware solution was premature at that time due to the complex nature of the SIRCS problem. While discouraging a premature detailed hardware solution, the Navy did require from each contractor a proposal that could be evaluated. The CDR called for a flexibility in a design within a feasible region containing an optimal central point

about which design iterations could be performed within that region. A graphic example of this design region flexibility is given in Figure 17. (The OR Expansion provided additional performance goals and thresholds.) Flexibility was called for in the CDR by requiring:

- Modularity in design to make SIRCS compatible with the five specific paltforms as well as 26 classes of ships.
- Fall-back alternatives for risk reduction.
- Capability growth assessment to keep SIRCS responsive to the threat in the 1990 time-frame in the event of a threat change.
- System alternatives under funding variation (± 1/3 available RDT&E and production funds).

This flexibility in the contractor's CDR required a more complex evaluation but resulted in a more realistic concept proposal.

Another of the main thrusts of the SIRCS program has been the introduction of cost consciousness into concept formulation in accordance with Circular A-109 principles. The OR specified a cost goal of $10 million or 10% of platform replacement cost, no absolute performance capability and the use of DTC principles in the development. This cost goal structure provided a crude but convenient sliding scale, establishing upper cost limits for various configurations of SIRCS to meet differing ship mission requirements. The Cost Analysis Guide emphasized LCC and DTC while providing

BALANCING COST AND PERFORMANCE DURING EXPLORATION OF ALTERNATIVES (CONCEPT) PHASE

OBJECTIVE: MINIMIZE SYSTEM LCC

SUBJECT TO: (1) GAINING SUFFICIENT PERFORMANCE IN ALL WARFARE AREAS

(2) PROCUREMENT AFFORDABILITY

FOR EXAMPLE:

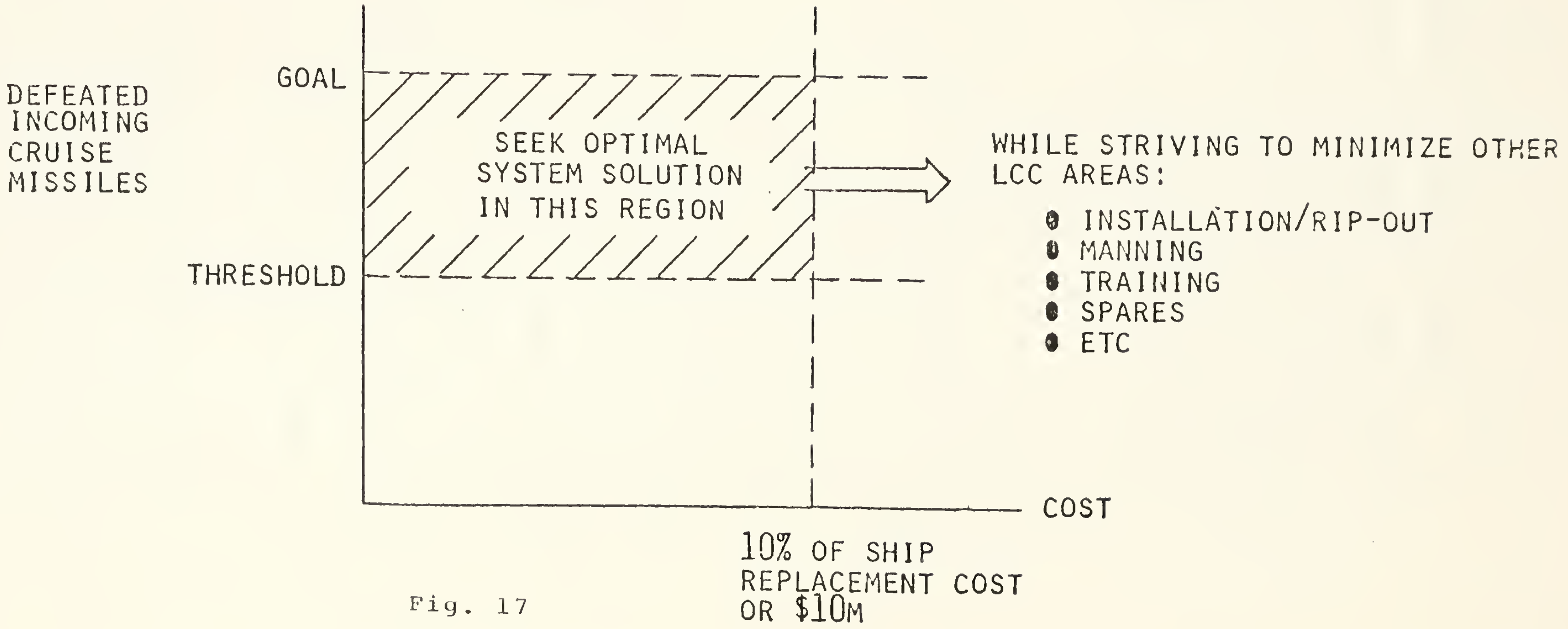

DEFEATED INCOMING CRUISE MISSILES
GOAL
THRESHOLD
SEEK OPTIMAL SYSTEM SOLUTION IN THIS REGION
COST
10% OF SHIP REPLACEMENT COST OR $10M
WHILE STRIVING TO MINIMIZE OTHER LCC AREAS:
● INSTALLATION/RIP-OUT
● MANNING
● TRAINING
● SPARES
● ETC

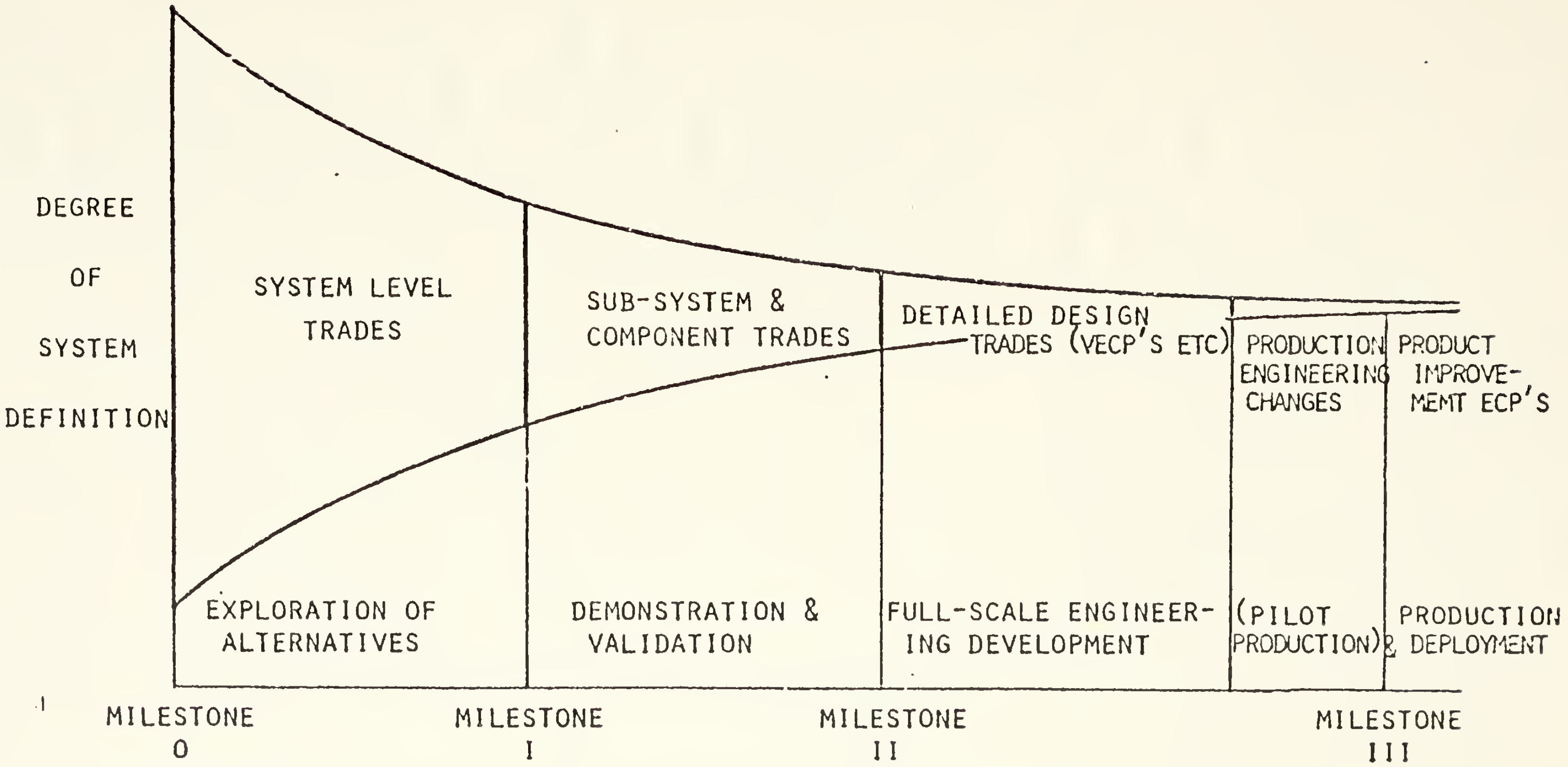
Fig. 17

extensive LCC elements. The CDR called for cost analysis and methodology plus DTC considerations and planning. The Evaluation Criteria (to be discussed later in this Section) gives equal weight to system military worth and system cost. Thus, the SIRCS Project Office established a rigorous cost discipline at the beginning of concept formulation to help control the tendencies of past programs toward high cost system alternatives.

The SIRCS Project Office also stressed a balancing of cost and performance through system design interaction throughout the program life. Figure 18 illustrates the cost and performance refinements resulting from the changing degree of system definition and risk reduction as the program progresses. The SIRCS Project Office recognizes the need for system design iteration and the correct degree of flexibility for design tradeoffs during each successive phase. The degree of cost and performance definition must be compatible and tailored for the particular development phase. In the past, detailed design specifications have been established too early resulting in significant engineering-change proposal (ECP) effort in the Full-Scale Development and Production Phases.

During the nine-month competitive industry studies segment, three oral progress reviews were held in August and October 1976 and January 1977. As a result of these reviews, it became apparent to the SIRCS Project Office that the three competing contractors had an excellent grasp of

BALANCING COST & PERFORMANCE THROUGH SYSTEM DESIGN ITERATION


DEGREE
OF
SYSTEM
DEFINITION
SYSTEM LEVEL TRADES
SUB-SYSTEM & COMPONENT TRADES
DETAILED DESIGN TRADES (VECP'S ETC)
PRODUCTION ENGINEERING CHANGES
PRODUCT IMPROVE-MEMT ECP'S
EXPLORATION OF ALTERNATIVES
DEMONSTRATION & VALIDATION
FULL-SCALE ENGINEER-ING DEVELOPMENT
(PILOT PRODUCTION)
PRODUCTION & DEPLOYMENT
MILESTONE 0
MILESTONE I
MILESTONE II
MILESTONE III

COST	AFFORDABILITY RANGE	DTC GOALS & THRESHOLDS	FIRM DTC GOALS	FIRM DTC GOALS
PERFORMANCE	MISSION CAPABILITY	PERFORMANCE GOALS & THRESHOLDS	FIRM PERFORMANCE REQUIREMENTS	DETAILED DESIGN SPECIFICATIONS

Fig. 18

the problem and were successfully formulating their recommended solutions to the OR. When questions did arise, the SIRCS Project Office was responsive to each inquiry, carefully ensuring that each contractor received the same information. As Mr. Robert Weiser, McDonnell-Douglas, SIRCS Program Manager, stated in an interview, "The communication with the Navy Project Office was excellent. They were very willing to discuss and explain the Navy problem while not indicating a preferred solution...I think the Navy Project Office (SIRCS) is doing an excellent job of implementing A-109" [Ref. 65].

On March 4, 1977, the Concept Development Reports (CDR) from each of the three competing contractors were delivered to the SIRCS Project Office. On March 8, 1977, the Source Selection Evaluation Board was convened to begin the concept evaluation segment of the Conceptual Phase. Initial analysis (Phase I) of the SSEB indicated that all three contractors could meet the requirements of the mission need (OR). The SIRCS Project Manager was "very satisfied with the proposals and pleased that each proposal offered a different technical solution. This was exactly what A-109 specified and set out to do. I am confident I have three separate system alternatives to meet the mission need... This points up the value of A-109 and the use of competition in concept formulation" [Ref. 28].

The Evaluation Criteria structure (previously stated in the RFP) used in the CDR analysis is illustrated in Figure 19. The parameters are weighted in decreasing

EVALUATION CRITERIA FOR VALIDATION PHASE

SIRCS

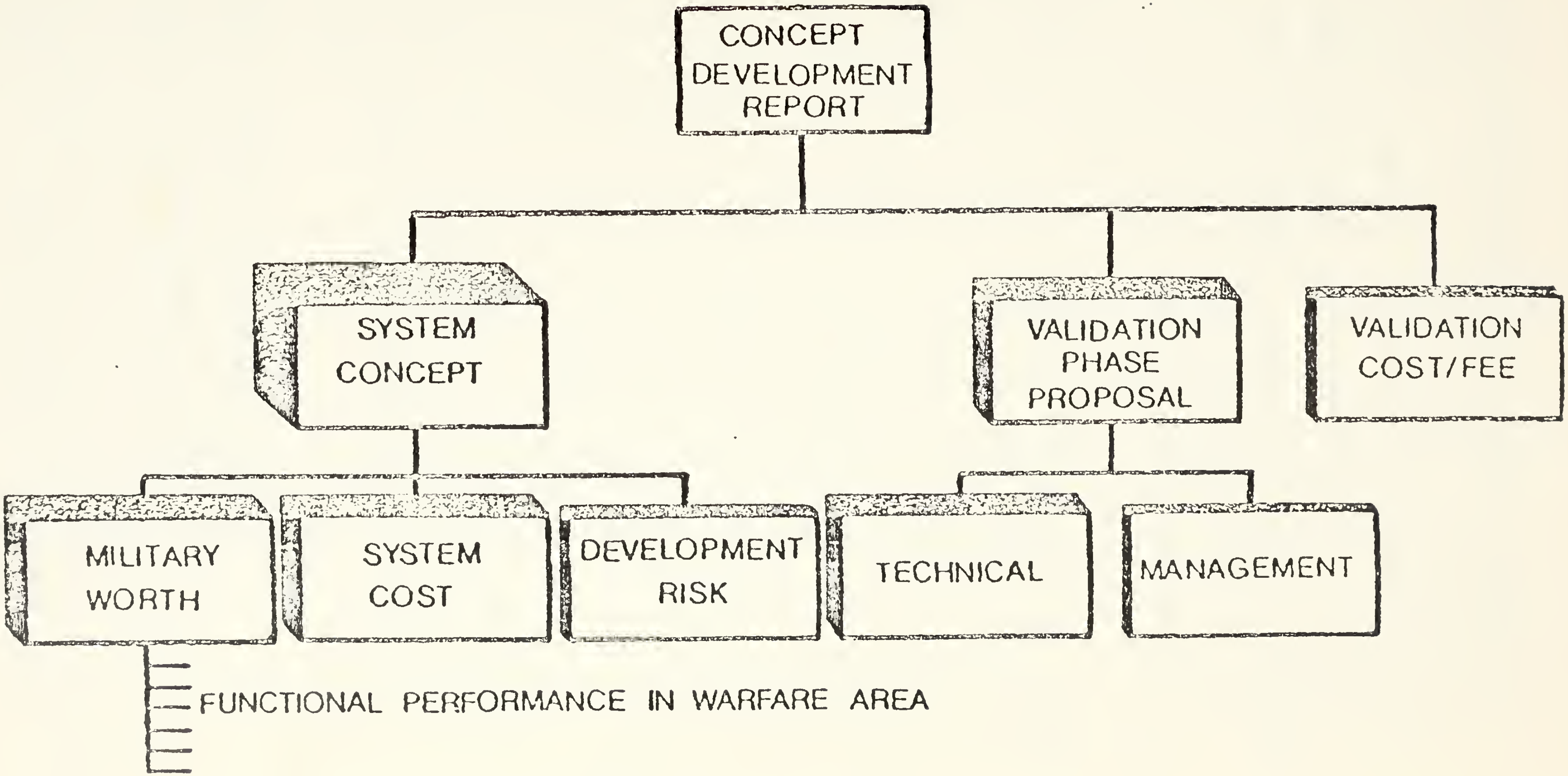


Fig. 19

importance moving left to right, with shading indicating relative importance. The equal weighting of Military Worth and System Cost reflects one of the more important points in the SIRCS acquisition strategy--the resolve to achieve an affordable design for SIRCS. One of the prime objectives of the criteria is to keep the evaluation focused at the system level. A detailed explanation of the Evaluation Criteria is given in Appendix N.

In November 1977, following a two-month delay caused by FY-78 budget perturbations, the Source Selection Evaluation Board (SSEB) completed the evaluation of the separate CDR's from the three competing contractors. McDonnell-Douglas and Raytheon have been tentatively selected for recommendation to proceed into the Validation and Demonstration Phase. Upon completion of review of the SSEB final report by the Source Selection Advisory Board, chaired by RADM C. P. Ekas, MAT-08, and the Source Selection Authority (SSA), ADM. F. H. Michaelis, CNM, the DCP will be updated and DSARC I will occur (now forecast for March 1978). It is also anticipated the OSC Milestone I decision point will occur in March 1978.

A complete chronology of SIRCS events to date is given in Appendix B.

C. SIRCS PROGRAM PLANNING FOR FUTURE PHASES

1. Demonstration and Validation Phase

The SIRCS Project Office has as one of its main objectives in the Demonstration and Validation Phase to resolve high system risks to a level acceptable to the Navy and

sufficient to proceed to Milestone II. Additionally, cost, performance, and schedule trade-offs will continue to be made by the two remaining contractors with reliability and maintainability having an increasingly important role. The trade-off process will be bounded by specified cost-performance goals and thresholds. This will be comprised of verification of the total system: surveillance, detection and identification, conduct and engagement, including both software and hardware. The system demonstration will be competitive and will be conducted at a Navy Land-Based Test Site, as will all subsystem level tests providing data to the system demonstration. The Full Scale Development (FSD) Phase Award Criteria to guide the validation effort will be specified.

The Demonstration and Validation Phase Proposal will contain a contractual document between the Navy and the contractor that will clearly and explicitly define the work to be accomplished. The contractor will provide system and subsystem performance specifications in response to Navy guidelines. The contractor will also provide LCC estimates and a Full Scale Development Plan Proposal. This requirement for the next phase proposal is a significant factor in Circular A-109 implementation. This requirement holds the promise of shortening the development cycle because it offers the opportunity to minimize delay or lag between phases as has occurred in the past.

The Demonstration and Validation Phase is anticipated to require a three-year time period with Milestone II, the

Full Scale Development Decision Point Scheduled for September 1981. A detailed description of the SIRCS Demonstration and Validation Phase strategy is given in Appendix O.

2. Full Scale Development Phase

Even though present SIRCS program strategy calls for only one contractor in the Full Scale Development (FSD) Phase, parallel development will be continued if funding is sufficient [Ref. 66]. If funds are constrained, necessitating a single prime contractor, the following measures to offset any loss of competition at the prime level should be emphasized:

- Pilot Production Option Clause
- Reliability Improvement Warranty (RIW) Clause
- Award Fee
- Rights In Data
- Competitive Data Packages
- Should Cost Reviews
- Breakouts where feasible for competitive procurement

The purpose of these measures is to keep the cost from escalating. The contractor will be required to specify his DTC goals and to project his cost to deliver the system. The Navy will have the right to exercise this option. However, since the SIRCS system will be closer to production during this phase, there should be less risk involved and system cost should be well developed. The estimated development cost is about $500 million, and the total cost goal in production is expected to be $3-$6 billion.

The FSD Phase is anticipated to require a four-year time period with Milestone III, Production Decision Point scheduled for September 1985. A forecast schedule of SIRCS Milestone is given in Figure 20.

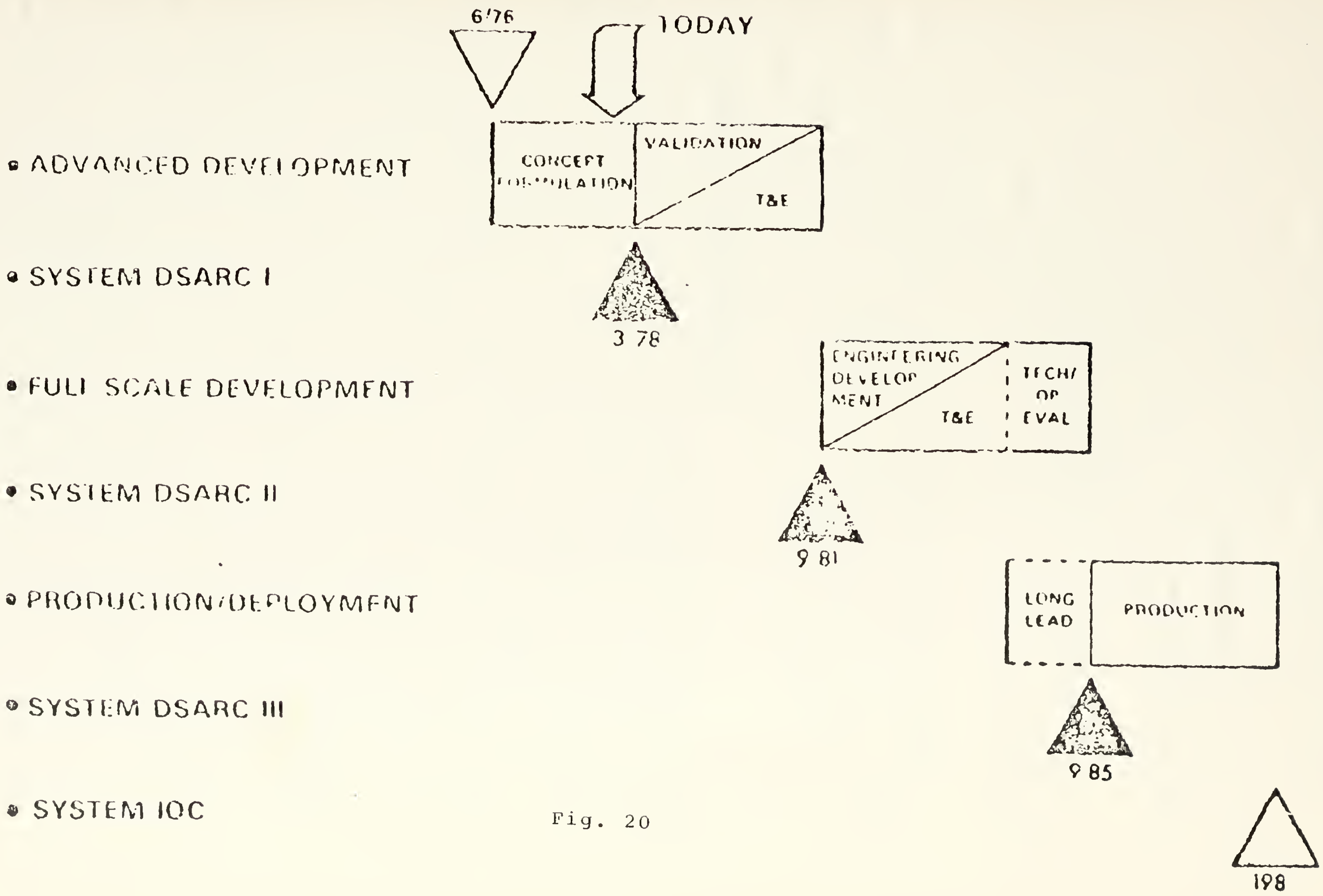
D. LESSONS LEARNED

1. Critical Requirements for a Competitive Concept Formulation

As a result of the experience of being one of the first programs to implement Circular A-109 principles, the SIRCS Project Office has listed the following as critical requirements for a competitive concept formulation [Ref. 66]:

- Formulate mission oriented requirements; care must be taken in the preparation of the MENS to ensure that mission needs rather than hardware solutions are proposed, the MENS then should become an integral part of the OR and DCP.
- Develop flexible and mission oriented evaluation criteria; the criteria should serve as a means of conveying to the contractor the needs and requirements of the customer (Navy).
- Ensure that proposals and innovative concepts also address real world functional constaints; evaluation constraints and thresholds should serve as a guide to the contractor.
- Provide a comprehensive Government-furnished information (GFI) package; a necessary item to ensure availability of technology base and to help contractors in forming teaming arrangements.

SIRCS
SCHEDULE



- ADVANCED DEVELOPMENT
- SYSTEM DSARC I
- FULL SCALE DEVELOPMENT
- SYSTEM DSARC II
- PRODUCTION/DEPLOYMENT
- SYSTEM DSARC III
- SYSTEM IOC

Fig. 20

- Control Government-contractor communications; control of industry's access to Government laboratories is necessary to ensure fairness in competition.
- Plan for oral progress reviews: use competition or the threat of competition as a pacing factor.
- Obtain industry review and feedback; an excellent method to supplement managerial and technical expertise of customer (Navy).
- Form solid Government team; project office, mission sponsor, function codes, cost analysts, contracts, legal, and laboratories; the TPAB and SSEB are necessary elements of the project team.

2. Budgetary Perturbations

One of the primary difficulties for the SIRCS Project Office has been the budgetary perturbations imposed by some elements of Congress attempting to micromanage the program.

During the initiation stages of the program, the SIRCS Project had little trouble obtaining its desired funding, receiving a cumulative total of \$3.2 million for study funds in FY-74 and FY-75, \$4.5 million in FY-76 and \$6.7 million in FY-7T (transition quarter) [Ref. 67]. The House Armed Services Committee (HASC) staff members reported that they thought the money was going for development of a so-called "lightweight fire control system", first evaluated at the Navy's Dahlgren facility during the Vietnam War. In 1976, these staff members discovered that SIRCS was not the incremental improvement fire control system they wanted but

was in fact a much different program that was implementing Circular A-109.

As a result, the SIRCS Program was given mixed support in the FY-77 budgetary process as indicated by the following sequence of key events:

- House Armed Services Committee (HASC) recommended zero funding authorization for FY-77 from a request of $16.1 million.
- Senate Armed Services Committee recommended funding SIRCS at $12.0 million.
- Joint Authorization Committee - upheld HASC position, but authorized $2.0 million of the line item "Fire Control Engineering" to be reprogrammed to SIRCS if the Navy so desired.
- House Appropriations Committee, as constrained by the earlier HASC action, recommended without prejudice zero funding for FY-77.
- Senate Appropriations Committee (SAC) reinstated SIRCS as an independent budget line, recommended an appropriation of the maximum amount authorized of $2.0 million, and encouraged the Navy to take reprogramming action to offset the remaining budget deficiency in FY-77.
- Joint Appropriations Committee upheld the earlier favorable action by the (SAC), which resulted in an appropriation bill of $2.0 million in FY-77.

Again, during the FY-78 budget cycle, the SIRCS program received mixed signals from Congress regarding their

commitment to Circular A-109 policy. In the Authorization Phase, the House deleted all SIRCS funding but this was reversed in conference [Ref. 68]:

> "But a string was attached....the conferees agreed to fund the full amount requested...but with the understanding that the Navy would follow an open-ended baseline approach...in effect putting the program outside the requirements of A-109."

The signal was reversed in the Appropriations Phase. The House approved the SIRCS funding, but the Senate zeroed it [Ref. 68].

> ..."because of the committees view that the program will not proceed in compliance with the Circular. The conferees...failed to agree...But the House conferees, deferring to the Senate position, will put before the House a motion that will provide the $4 million but only on the condition that it is'expended in compliance with...Circular A-109.' If these motions pass without modification, the instructions to the Navy...would then appear to be: under the authorization, manage the program outside of A-109; under the appropriation, be sure to adhere scrupulously to the A-109 guidelines."

Final action on the FY-78 DOD budget appropriated $3.99 million for the SIRCS Project provided Circular A-109 principles continued to be followed.

A sequence of actions taken by Congress on the FY-78 budget is given in Appendix P.

Due to these funding limitations, program plans had to be modified. First, as previously discussed, only three (instead of the planned four) study contracts were awarded for the Conceptual Phase. Second, DSARC I and Milestone I along with the resulting award of the Demonstration and Validation Phase contracts have been delayed until March 1978 (instead of the original December 1977). Third, the

depth of evaluation of CDR's has been reduced because of reduction in numbers of Project team members (a two team evaluation was reduced to one team). Fourth, as previously discussed, the evaluation process was delayed two months in its completion.

Industry has taken note of the mixed support of Congress for the SIRCS Project and Circular A-109. Mr. Max Lehrer, Vice President of RCA and former principal advisor to SECDEF on Defense program fiscal matters, stated in a National Contract Management Association Meeting [Ref. 67]:

> "You might think that SIRCS--the only program acknowledged to be carrying out Congressionally ordained new procurement policy--should be sitting pretty. Unfortunately, this is not the case. While the Government Operations Committee was applauding SIRCS, the Armed Services Committees severely cut the funding requested in the DOD FY-77 budget.
>
> "Since Congress will now be directly involved in approving DOD's needs and goals from the outset, it is essential that Congressional approvals include sufficient funding for both support of the acquisition of competitive conceptual systems and subsequent risk elimination tasks using parallel short-term contracts.
>
> "Timely and sufficient funding must also be available to support DOD when the government selects the alternative systems to compete during the validation phase --which normally includes essential prototyping to eliminate potential cost drivers and risk.
>
> "Without adequate and timely funding, A-109 will be just another noble experiment."

But Congress is not the only source of budgetary perturbation for the SIRCS Program. An apparent lack of interface between the acquisition process (DSARC/DCP) and the PPBS process during front-end program decisions may result in a serious impact on program development cost and deployment

schedule. At the same time the DCP was being approved by OSD, funds for SIRCS were being taken out of the Five Year Defense Plan (FDYP). In April 1976, after HASC action, a Navy decision reduced the SIRCS line item by $155 million in the Program Objectives Memorandum (POM-78). OPNAV action on the FY-78 budget proposes further cuts of up to $60 million in the FY78-83 time period. For the FY-78 budget alone, a request for $22 million in the Navy Comptroller (NAVCOMPT) submittal was reduced to $5.5 million during the OPNAV review. This reduction occurred even though NAVMAT had singled out SIRCS as the number one budget deficiency in Anti-Ship Missile Defense (ASMD) and had stated that the requested funds were vital if the industry teams were to be maintained and momentum lost during FY-77 was to be regained.

Unless sufficient funds are programmed in FY-79-80, it is inevitable that the industry and laboratory teams will begin to break up. This will lead to loss of a significant investment and a return to business as usual in the acquisition process. The loss of competition will not only break faith with industry but could prove to be an embarrassing inconsistency for the Navy in view of its prior support for the SIRCS development approach and Circular A-109.

3. Other Problem Areas

In addition to the problem areas discussed in this Section and in Section III.D., the SIRCS Project has encountered the following implementation difficulties:

-Life cycle cost and development cost trade-off - The Project Office asks Congress for an increase in

development funds while promising a decrease in overall life cycle cost.

-Availability of Research, Development, Test and Evaluation (RDT&E) funds for competitive studies and demonstration - There is a present bias in the procurement system against committing funds to a program until the hardware is defined. Congress does not want to pay for the full cost of concept formulation as specified by OFPP and Circular A-109. There is a need for more exploratory development funds to perform adequate concept studies. The contractors invested a great deal of their own resources to do the SIRCS nine-month study.

-Defining and developing the cost/performance goals and thresholds - An important requirement of Circular A-109 is to specify the cost goals within which the system must be developed. There is a dichotomy between wanting the optimal operational system and being able to afford to acquire the system after it is developed.

-Imparting enough flexibility to avoid a specific hardware solution while maintaining distinct evaluatable concepts - Trade-off iterations required for innovative techniques must be balanced by a requirement for a preferred concept.

-Briefing higher level review organizations while protecting the integrity of contractor information - the proprietary aspects of the contractor proposals

during the front-end development must be guarded in the review process within the Navy, OSD and Congress for acquisition and budgetary approval.

E. STATUS OF IMPLEMENTATION

To evaluate the SIRCS program implementation of Circular A-109, the 12 applicable recommendations ("Acquisition of Major Systems") of the Commission on Government Procurement (COGP) which formed the foundation of Circular A-109 are compared with the SIRCS program elements. The COGP recommendations (found in Appendix E) have been summarized for ease of comparison. Applicable paragraphs of Circular A-109 (found in Appendix G) are noted in parenthesis with the COGP recommendations.

	COGP RECOMMENDATION (Circular A-109 Paragraph)	SIRCS PROGRAM ELEMENT
1.	Program to have Agency head statement of needs and goals that have been reconciled with overall agency capabilities and resources. (6a, 7a, 10a, 10b)	Implemented. This will have to be reapplied at each Milestone in acquisition cycle. No major problem expected with this recommendation.
2.	Annual Congressional budget reviews of agencies missions and the needs and goals for programs. (6c, 14, 15a, 15b)	DOD has responsibility to submit SIRCS budget in mission area format. Responsibility for implementation of this recommendation also belongs to Congress. Congress is currently reviewing acquisition programs in a line-item, piecemeal fashion. With implementation of the Congressional Budget Act of 1974 calling for mission area budgeting, Congress should have a better understanding of the needs and

		goals of programs and be better prepared to exercise its responsibilities and allocate national resources.
3.	Use of private sector sources and Government technical centers for research, concept work and subsystem development. (6F, 11a, 11d)	Implemented. SIRCS used feedback from industry and Government labs in formalizing GFI data; used seven industries in concept proposal segment; used three contractors in concept study segment, plan to use two contractors in Demonstration and Validation phase.
4.	Create alternative system candidates by soliciting industry proposals, use team of experts for evaluation. (7c, 7d, 7e, 8F, 8g, 10c, 11b, 11c, 11e).	Implemented. Solicitation process keystone to SIRCS acquisition strategy; use of TPAB and SSEB to assist SIRCS Project Office in evaluation.
5.	Finance the exploration of alternative systems by mission area budgeting and financing. (7e)	Implemented by SIRCS. Congressional budgetary perturbations have caused difficulties for Project. This critical element must be resolved to prevent serious impact on the deployment of the SIRCS system.
6.	Maintain competition between contractors exploring alternative systems by use of annual fixed-level contracts assignment of Agency representatives to contractors, utilization of Government organizations to monitor and evaluate contractor efforts. (6b, 7b, 11g)	Implemented. Fixed level contracts, although not annual, are monitored by periodic oral reviews; use of plant representatives and evaluation to monitor are planned by SIRCS Project.
7.	Limit premature system commitment. (11L, 11i, 11j, 12a, 12b, 13a, 13b)	Implemented. Contractor competition is a keystone to the SIRCS acquisition strategy.

8.	Obtain agency head approval if resources are to be devoted to a single system without exploring of competitive system candidates. (11j, 12c)	Implemented. Agency head approved SIRCS acquisition strategy which includes contractor competition up to FSD Phase. New DOD Directives contain this COGP recommendation.
9.	Need reconfirmed and system tested and evaluated prior to Agency head approval for production. (7d, 13b, 13d)	Implemented. This recommendation will be applied at each Milestone prior to production decision. (Milestone III).
10.	Use contracting as a system acquisition tool using selective application of detailed contracting regulations, simplified contractual arrangements for final development/production and priced production options. (11g)	Implemented and planned for implementation. This recommendation will have to be reapplied during contract negotiation throughout the acquisition cycle.
11.	Unify policy making and monitoring responsibilities within each agency and agency component. (6d, 6e, 7F, 8b, 8c, 8d, 8e)	Implemented. Part of this recommendation deals with insuring the Project Office is staffed with top talent. This is being done on a continuous basis. The unification of acquisition responsibilities at the Navy and OSD level have been completed with the designation of the Defense Acquisition Executive and the Navy Acquisition Executives.
12.	Delegate authority for all technical and program decisions to the operating agency components except for the four key agency head decisions. (8a, 9a, 9b, 9c, 9d)	OSD has responsibility for the implementation of this recommendation. The new DOD Directives has the provision for delegating to SECNAV and the DNSARC the DSARC and DCP review process.

From the previous discussion, it is evident that the SIRCS program is being conducted in agreement with the COGP recommendations for Major System Acquisitions and with the implementation of Circular A-109. A detailed comparison of the COGP recommendations and the SIRCS program is given in Ref. 27.

VII. CONCLUSIONS AND RECOMMENDATIONS

A. SUMMARY

For 20 years prior to the issuance of Circular A-109, major system acquisition policy had been evolving in an environment which saw cost overruns, "gold-plating" of specifications, schedule slippages, and inadequate performance achievement. The economic environment of increasing fiscal constraints combined with an increasing awareness in Congress of the costliness of many Government programs called for acquisition reform. Various study groups and reports addressed these persistent problems but little reform resulted. Finally, the Commission on Government Procurement was organized and chartered by Congress to take an integrated view of the deficiencies in major system acquisition. The COGP report containing 149 recommendations was issued after a two and one-half year study and has become the cornerstone for Federal Government Acquisition reform. Twelve recommendations concerning major system acquisition addressed the areas of establishing missions needs and goals for new systems, exploring alternative systems, choosing a preferred system, implementing the system and reorganizing acquisition management structure and authority and responsibility relationships.

The Office of Federal Procurement Policy, formed as a result of one of the COGP recommendations, issued OMB

Circular A-109 in April 1976 to establish Federal government policies in the acquisition of major systems. The 12 major system acquisition recommendations of the COGP form the foundation of the new circular. Circular A-109 defines the system acquisition process starting from the agency's reconciliation of its mission needs with its capabilities, priorities and resources to the introduction of the system into operational use. The language of Circular A-109 is broad enough to permit a degree of flexibility to tailor the principles to each program individually but specific enough to ensure compliance. The main points of Circular A-109 are the redefinition of levels of responsibility for policy decisions and budget control, for identification and approval of mission needs and goals and for the management of the acquisition process. Additionally, Circular A-109 relates major system acquisition to agency mission needs and goals, requires early development effort in design concepts rather than hardware solutions, establishes early Congressional review of these mission needs and goals, and calls for early research and development effort to satisfy any deficiencies in mission needs and goals. Finally, Circular A-109 calls for early and meaningful competition with improved opportunities for innovative private sector contributions, and for avoidance of premature commitment to full-scale development and production.

Recent developments in budget execution and expenditure control, particularly Mission Area Budgeting, the Congressional Budget and Impoundment Act, and Zero-Based

Budgeting, will impact on the effectiveness of implementation of Circular A-109. Careful coordination and liaison will be necessary to prevent conflicts.

There are some potential problem areas in the implementation of Circular A-109, particularly in defending and justifying funding. These budget difficulties are a result of the requirement to commit funds to a project before the hardware is defined, the proprietary nature of competing concepts and hardware limiting disclosure, the necessity to quantify long-term benefits of competition, and the dilemma of defining cost goals prior to hardware definition.

Within the Department of the Defense and the Department of the Navy, new directives have been issued or are in the process of being issued to implement Circular A-109. Three areas of required major change to Navy acquisition policies and procedures are redefinition of organizational positions and roles, restructuring of the front-end of the Major System life cycle, and decentralization in acquisition decision-making and program management.

The Shipboard Intermediate Combat Range System project is one of the first programs to successfully implement Circular A-109. The acquisition strategy that was formulated at program initiation and followed through to date in the latter stages of the Conceptual Phase is in agreement with the COGP recommendations and Circular A-109 principles. The planning for the Demonstration and Validation and the Full Scale Development Phases indicate continued compliance. The

SIRCS experience gained regarding the critical requirements for concept formulation and the budgetary and other problem areas should prove to be a valuable example for the future implementation of Circular A-109 in other programs.

B. FINAL REFLECTIONS

Initial implementation of Circular A-109 has provided an insight to several long-term benefits of major system acquisition.

Through requirements definition in terms of mission needs, an improved linkage of resource inputs to program needs can be made. Development funds expended under Circular A-109 will be tied to mission area requirements instead of some predetermined hardware solution. An important step to formalize this benefit within DOD in resource allocation has been the establishment of the Mission Element Need Statement (MENS). As a basis for DOD program initiation approval, this should serve as a key element for improved linkage between resource inputs and service needs.

The early industry participation called for under Circular A-109 improves the chance for innovation. The industrial competition and promise of substantial future business has fostered an atmosphere of inventiveness and innovative approach to problems. The resulting system concepts have displayed unique balances between cost, performance and risk parameters. Realistic and objective proposals reflect this innovative atmosphere.

Requirements definition in terms of mission needs requires a system level solution and reduces the potential for sub-system optimization due to an in-house bias. Tradeoff opportunities for sub-system development become more available in system-level optimization. Cost-effective systems are possible through a more proper balance of subsystems.

As a result of early industry involvement called for under Circular A-109 principles, a system engineering approach to concept formulation is now available. Previously, this system engineering approach was rarely achievable utilizing only in-house Government bureaucracy for concept design during the initial stages of a program. The highly differentiated and platform (hardware) oriented headquarters and laboratory facilities severely hampered the rational system engineering approach. Favored, preconceived hardware solutions were often specified to industry with little consideration for tradeoff analysis. The highly complex integration of future systems will require the disciplined systems engineering approach.

Implementation of Circular A-109 holds the promise for the reduction of development leadtime. Parallel development should provide options to preclude schedule slippage. The requirement fcr the next phase proposal forces advanced planning and minimizes the previously-experienced internal program delays due to generation of new solicitations and their responses. Additionally, the strengthening of the Program Manager's authority and responsibility and the

decentralization of acquisition decision-making minimizes the previously-experienced external program delays.

Strong industry competition provides for a potential reduction in life cycle cost. The identification and reduction of risk in the cost/performance trade-offs forced by competition should help preclude the large cost overruns of past projects.

But final implementation of Circular A-109 also requires organizational role changes on the part of Congress, OSD, the service components, government laboratories and industry. The problem now is one of educating and convincing the parties of the obvious improvements to the system acquisition process that Circular A-109 offers. The implementation may prove to be long and difficult but the potential rewards of this major reform are significant.

The SIRCS Program described in this thesis is one of the first DOD programs to follow Circular A-109 principles. Other programs are in the very early stages of implementing Circular A-109. Much experimentation, evaluation and lessons to be learned remain ahead as these programs mature and Circular A-109 is more widely implemented. The latent advantages and potential pitfalls hold the promise of a challenging investigation. Continued analysis by acquisition researchers and student theses is recommended to report the unfolding improvements of Circular A-109 to Major System Acquisition.

APPENDIX A

DATA SOURCES

INTERVIEWEE	TITLE	ORGANIZATION
Honorable Lester Fettig	Administrator	OFPP
Honorable Dale W. Church	Deputy Undersecretary of Defense (Material Acquisition)	OSD
Mr. Fred H. Dietrich	Asst. Administrator for System Acquisition	OFPP
Mr. William N. Hunter	Dep. Asst. Administrator for System Acquisition	OFPP
Mr. Robert Berry	Dep. Director of Defense Research and Engineering (Policy and Planning)	OSD
VADM F. C. Turner	Dep. Chief of Naval Operations for Air	OPNAV(OP-05)
VADM F. S. Petersen	Commander, Naval Air Systems Command	NAVAIR(AIR00)
RADM C. P. Ekas	Dep. Chief of Naval Material for Material Acquisition	NAVMAT(MAT-08)
CDR A. S. Mobley	Project Manager	SIRCS
Mr. Vince Juric	Dep. Project Manager	SIRCS
CDR Jerry Dunn	Dep. for Operations	SIRCS
LCDR William Musgrave	Dep. for Business /Financial	SIRCS
Mr. Mike Lindemann	Dep. for System Engineering	SIRCS

CONFERENCES/SEMINARS

MEETING	SPEAKERS	ORGANIZATION
Naval Air Executive Institute, Naval Postgraduate School 20-22 April 1977	ADM F. H. Michaelis Mr. Fred Dietrich	COM NAVMAT OFPP
Naval Air Executive Institute, Tactical Missile Colloquium Naval Postgraduate School 13 May 1977	CDR Scott Mobley Prof. Robert Judson	SIRCS NPS
National Contract Management Association Major System Acquisition Conference, San Jose, California 26 May 1977	Mr. Fred Dietrich Mr. George Coleman Mr. Robert Berry Mr. Frank Forthopper	OFPP NASA DDR&E Lockheed
National Contract Management Association 16th Annual National Symposium, Los Angeles, California 20-22 July 1977	Honorable Lester Fettig Mr. Fred Dietrich Mr. Pete Malloy Mr. John O'Hara	OFPP OFPP Tele-Ryan Aero Boeing

APPENDIX B

CHRONOLOGY

Nov 69	Commission on Government Procurement (COGP) Established (PL 91-129)
Dec 72	COGP Report (Part C "Acquisition of Major Systems")
Aug 74	Office of Federal Procurement Policy (OFPP) Established in OMB (PL 93-400)
Dec 74	LICGS and ASCM Defense System merged into SIRCS by the Director, Defense Research and Engineering
10 Apr 75	SIRCS project management assigned to Naval Sea Systems Command, Anti-Ship Missile Defense Project Office
23 Apr 75	Management and procurement strategy presented to the Director
21 May 75	Operational Requirement issued by the Chief of Naval Operations
9 June 75	Advance Procurement Plan approved by Commander, Naval Sea Systems Command
1 July 75	Assistant Secretary of the Navy, Research and Development, briefed on SIRCS
14 Aug 75	Principal Deputy Director, Defense Research and Engineering, provisionally endorsed SIRCS project
15 Aug 75	Letter issued by Director which requires SIRCS project review and draft decision coordinating paper in January 1976
19 Aug 75	Briefing given to industry
31 Oct 75	Request for proposal released
31 Oct 75	Source Selection Plan approved by the Source Selection Authority
21 Nov 75	Preproposal conference held

19 Dec 75	Industry proposals received
5 Jan 76	Proposal evaluation began
Feb 76	Budget hearings--House Committee on Armed Services
17 Mar 76	Budget hearings--Senate Committee on Armed Services
20 Mar 76	House Committee on Armed Services Report recommends elimination of SIRCS
5 Apr 76	OMB Circular A-109 "Major Systems Acquisition" issued
23 Apr 76	Final SSEB proposal evaluation completed
26 Apr 76	Decision coordinating paper sent for informal review by various assistant secretaries of Defense
18 May 76	Three (3) Concept Formulation Study Contracts were awarded, one each for RCA, Raytheon and McDonnell-Douglas at a combined value of approximately $4.5 million
1 June 76	DCP forwarded by ASN (R&D) to DDR&E
17-18 Jun 76	GFI Feedback conferences held for successful offerors
4-6 Aug 76	Raytheon, RCA, and McDonnell-Douglas presented their first Oral Progress Review
Aug 76	OFPP Pamphlet No. 1 "A Discussion of the Application of OMB Circular A-109"
20 Aug 76	DOD Directive 5000.30 "Defense Acquisition Executive" issued
13-15 Oct 76	Oral Progress Reviews - RCA, McDonnell-Douglas, Raytheon
26 Oct 76	OSD/OMB briefed on SIRCS FY-78 budget
28 Oct 76	TPAB meeting, re: SSEB membership and areas of responsibility
1 Dec 76	Project Office key personnel visit to McDonnell-Douglas plant
7 Dec 76	Project Office key personnel visit to RCA plant

8 Dec 76	Project Office key personnel visit to Raytheon plant
11-13 Jan 77	Oral Progress Review Number 3 presented by each system contractor. Proposed system concepts were briefed
19 Jan 77	DOD Directive 5000.1 "Major Systems Acquisitions", DOD Directive 5000.2 "Major System Acquisition Process, updated"
28 Feb 77	Briefing to SSAC - Weights for Evaluation Criteria
4 Mar 77	Concept Development Reports (CDR) delivered
8 Mar 77	Convened SSEB
1 Apr 77	Concluded Phase I of SSEB on schedule. Concept Development Reports of all three contractors determined to be in competitive range
7 Apr 77	The House Armed Services Committee recom-ended mended deletion of the entire SIRCS FY-78 budget. See Appendix P
3 May 77	Senate Armed Services Committee approved FY-78 TACAIR authorized budget, SIRCS not marked. See Appendix P
17 May 77	Increase FY-78 SIRCS funding to 13.9 M (Senate Bill) See Appendix P
20 Jun 77	Joint Authorization Conference Report--SIRCS funded $3.9 M with direction to define Navy Baseline and recompete for Validation Phase. See Appendix P
23 Jun 77	SECNAV sends letter of support of A-109 and SIRCS to Senator Chiles
29 Jun 77	Senate Appropriations Committee - SIRCS - $0.0 M See Appendix P
4 Aug 77	Joint Appropriations Conference appropriated $3.894 M for SIRCS with language for the program to proceed in accordance with OMB Circular A-109. This language is in conflict with the earlier authorization bill language. See Appendix P

5 Aug 77	FY 79/80 NAVCOMPT hearings
Nov 77	SSEB tentatively selected McDonnell-Douglas and Raytheon for Validation Phase

APPENDIX C

[REF. 26]

Summary Chart of Management Studies

Date	Name of Study	For	Conducted by	Purpose and Scope
1947	Steelman Report	President	President's Scientific Research Board	A comprehensive review of science and public policy including research administration, personnel problems, and the Government's policy.
16 Apr 1954	Gates Committee	SECNAV	In-house committee on organization of the Department of the Navy (DON)	Review of organizational structure of the Department of the Navy to identify overlapping or duplicative functions, problems, and difficulties.
4 Aug 1954	Riehlman Subcommittee	Congress	Subcommittee of Committee on Government Operations	Organization and administration of R&D in DOD.
May 1955	Second Hoover Commission	Congress	Commission chaired by Herbert Hoover	Comprehensive review of the Executive Branch of the Government.
31 Jan 1959	Franke Board	SECNAV	In-house committee on organization of the DON	Review of organization of the Navy in view of DOD Reorganization Act of 1958 and technological advances since the Gates report.
1 Jun 1959	A.D. Little	NRAC/SECNAV	A.D. Little, Inc.	Review of basic research in the Navy for appropriate level, etc.
1961/1962	Task Force 97	SECDEF	In-house committee chaired by Deputy DDR&E	Review of operations of in-house laboratories and recommendations of changes.
17 May 1962	Bell Report	President/Congress	Cabinet-level committee chaired by D. Bell, Director, Bureau of Budget	Comprehensive review of Government contracting for R&D to improve effectiveness.
Apr 1962	Astin Panel	Federal Council for Science and Technology	Standing Committee of FCST	Study of factors affecting ability to select, recruit, develop, and retain superior scientific and engineering personnel in the Federal Government.
8 Sep 1962	Furnas Report	SECDEF	Defense Science Board Subcommittee	Review of "health" of DOD laboratories and recommendations of improvements. Also review of Bell report and development of recommendations.
15 Dec 1962	Dillon Review	SECNAV	Committee of in-house representatives and consultants	Comprehensive review of entire Navy organization; in-depth review of functions and operations down to and within bureaus and offices.
Nov 1964	Sherwin Plan	DDR&E	Chalmers Sherwin (Deputy DDR&E)	Improvement of operation and management of DOD in-house laboratories.
17 Dec 1964	Task Group B	ASN(R&D)	In-house group headed by RADM Ruckner	Enable ASN(R&D) to respond to Sherwin Plan.
1965	Morse Study	ASN(R&D)	In-house group chaired by Dr. Raney	Review of functions and operations of Navy laboratories in light of current and future needs. Recommendations of consolidations, closures, etc.
6 Dec 1966	Benson Study	SECNAV/CNO	In-house group chaired by Rear Admiral Benson	Review of Navy Department staff functions in light of change from bilateral to unilateral system.
1 Jul 1970	Blue Ribbon Defense Panel	President/SECDEF	Distinguished out-of-house committee	Study of entire organization and structure of DOD.
1 Jul 1971	Glass Committee	SECDEF	In-house group chaired by Dr. Glass	Review of BRDP report, review of DOD laboratories, and recommendation of actions.
Dec 1972	Commission on Government Procurement	Senate	High-level, congressional, industry, and Government team	Broad, in-depth study of procurement practices Government-wide.

APPENDIX D

THE COGP MEMBERS

PERKINS McGUIRE, Chairman
Consultant and
Corporate Director
Washington, D. C.

PAUL W. BEAMER
Senior Vice President and
Director, Valtee Corporation
West Boylston, Massachusetts

Senator LAWTON M. CHILES, Jr.
Florida

Senator EDWARD J. GURNEY
Florida

RICHARD E. HORNER
President and Director
E. F. Johnson Company
Waseca, Minnesota

Congressman FRANK HORTON
New York

Congressman CHET HOLIFIELD
Vice Chairman
California

PETER D. JOERS
Special Assistant to the
President of Weyerhauser Corp.
Hot Springs, Arkansas

ARTHUR F. SAMPSON
Acting Administrator
General Services Administration, Washington, D. C.

FRANK SANDERS
Under Secretary of the Navy
Department of the Navy
Washington, D. C.

ELMER B. STAATS
Comptroller General of the
United States
Washington, D. C.

JAMES E. WEBB
Attorney at Law
Washington, D. C.

PROFESSIONAL STAFF

OFFICE OF THE DIRECTOR OF COMMISSION STUDIES

Donald E. Sowle, Director
of Commission Studies

Robert R. Judson, Deputy
Director of
Commission Studies

OFFICE OF THE EXECUTIVE SECRETARY

Hugg N. Eskildson, Jr.
Executive Secretary

OFFICE OF THE GENERAL COUNSEL

O. S. Hiestand, General Counsel
C. Normand Poirier, Deputy General Counsel

[REF. 2]

APPENDIX E

LIST OF COGP RECOMMENDATIONS

ESTABLISHING NEEDS AND GOALS

1. Start new system acquisition program with agency head statements of needs and goals that have been reconciled with overall agency capabilities and resources.

    (a) State program needs and goals independently of any system product. Use long-term projections of mission capabilities and deficiencies prepared and coordinated by agency component(s) to set program goals that specify:

        (1) Total mission costs within which new systems should be bought and used
        (2) The level of mission capability to be achieved above that of projected inventories and existing systems
        (3) The time period in which the new capability is to be achieved

    (b) Assign responsibility for responding to statements of needs and goals to agency components in such a way that either:

        (1) A single agency component is responsible for developing system alternatives when the mission need is clearly the responsibility of one component; or
        (2) Competition between agency components is formally recognized with each offering alternative system solutions when the mission responsibilities overlap.

2. Begin Congressional budget proceedings with an annual review by the appropriate committees of agency missions, capabilities, deficiencies, and the needs and goals for new acquisition programs as a basis for reviewing agency budgets.

3. Support the general fields of knowledge that are related to an agency's assigned responsibilities by funding private sector sources and Government in-house technical centers to do:

   (a) Basic and applied research
   (b) Proof of concept work
   (c) Exploratory subsystem development. Restrict subsystem development to less than fully designed hardware until identified as part of a system candidate to meet a specific operational need.

4. Create alternative system candidates by:

   (a) Soliciting industry proposals for new systems with a statement of the need (mission deficiency); time, cost, and capability goals; and operating constraints of the responsible agency and component(s), with each contractor free to propose system technical approach, subsystems, and main design features.
   (b) Soliciting system proposals from smaller firms that do not own production facilities if they have:

      (1) Personnel experienced in major development and production activities
      (2) Contingent plans for later use of required equipment and facilities.

   (c) Sponsoring, for agency funding, the most promising system candidates selected by agency component heads from a review of those proposed, using a team of experts from inside and outside the agency component development organization.

5. Finance the exploration of alternative systems by:

   (a) Proposing agency development budgets according to mission need to support the exploration of alternative system candidates.
   (b) Authorizing and appropriating funds by agency mission area in accordance with review of agency mission needs and goals for new acquisition programs.
   (c) Allocating agency development funds to components by mission needs to support the most promising system candidates. Monitor components' exploration of alternatives at the agency head level through annual budget and approval reviews using updated mission needs and goals.

6. Maintain competition between contractors exploring alternative systems by:

   (a) Limiting commitments to each contractor to annual fixed-level awards, subject to annual review of their technical progress by the sponsoring agency component.
   (b) Assigning agency representatives with relevant operational experience to advise competing contractors as necessary in developing performance and other requirements for each candidate system as tests and tradeoffs are made.
   (c) Concentrating activities of agency development organizations, Government laboratories, and technical management staffs during the private sector competition on monitoring and evaluating contractor development efforts, and participating in those tests critical to determining whether the system candidate should be continued.

CHOOSING A PREFERRED SYSTEM

7. Limit premature system commitments and retain the benefit of system-level competition with an agency head decision to conduct competitive demonstration of candidate systems by:

   (a) Choosing contractors for system demonstration depending on their relative technical progress, remaining uncertainties, and economic constraints. The overriding objective should be to have competition at least through the initial critical development stages and to permit use of firm commitments for final development and initial production.
   (b) Providing selected contractors with the operational test conditions, mission performance criteria, and lifetime ownership cost that will be used in the final system evaluation and selection.
   (c) Proceeding with final development and initial production and with commitments to a firm date for operational use after the agency needs and goals are reaffirmed and competitive demonstration results prove that the chosen technical approach is sound and definition of a system procurement program is practical.
   (d) Strengthening each agency's cost estimating capability for:

      (1) Developing lifetime ownership costs for use in choosing preferred major systems
      (2) Developing total cost projections for the number and kind of systems to be bought for operational use

        (3) Preparing budget requests for final development and procurement.

8. Obtain agency head approval if an agency component determines that it should concentrate development resources on a single system without funding exploration of competitive system candidates. Related actions should:

    (a) Establish a strong centralized program office within an agency component to take direct technical and management control of the program.
    (b) Integrate selected technical and management contributions from in-house groups and contractors.
    (c) Select contractors with proven management, financial, and technical capabilities as related to the problems at hand. Use cost-reimbursement contracts for high technical risk portions of the program.
    (d) Estimate program cost within a probable range until the system reaches the final development phase.

SYSTEM IMPLEMENTATION

9. Withhold agency head approval and congressional commitments for full production and use of new systems until the need has been reconfirmed and the system performance has been tested and evaluated in an environment that closely approximates the expected operational conditions.

    (a) Establish in each agency component an operational test and evaluation activity separate from the developer and user organizations.
    (b) Continue efforts to strengthen test and evaluation capabilities in the military services with emphasis on:

        (1) Tacticahly oriented test designers
        (2) Test personnel with operational and scientific background
        (3) Tactical and environmental realism
        (4) Setting critical test objectives, evaluation, and reporting.

    (c) Establish an agencywide definition of the scope of operational test and evaluation to include:

        (1) Assessment of critical performance characteristics of an emerging system to determine usefulness to ultimate users
        (2) Joint testing of systems whose missions cross service lines
        (3) Two-sided adversary-type testing when needed to provide operational realism

(4) Operational test and evaluation during the system life cycle as changes occur in need assessment, mission goals, and as a result of technical modifications to the system.

10. Use contracting as an important tool of system acquisition, not as a substitute for management of acquisition programs. In so doing:

    (a) Set policy guidelines within which experienced personnel may exercise judgment in selectively applying detailed contracting regulations.
    (b) Develop simplified contractual arrangements and clauses for use in awarding final development and production contracts for demonstrated systems tested under competitive conditions.
    (c) Allow contracting officials to use priced production options if critical test milestones have reduced risk to the point that the remaining development work is relatively straightforward.

ORGANIZATION, MANAGEMENT, AND PERSONNEL

11. Unify policymaking and monitoring responsibilities for major system acquisitions within each agency and agency component. Responsibilities and authority of unified offices should be to:

    (a) Set system acquisition policy.
    (b) Monitor results of acquisition policy.
    (c) Integrate technical and business management policy for major systems.
    (d) Act for the secretary in agency head decision points for each system acquisition program.
    (e) Establish a policy for assigning program managers when acquisition programs are initiated.
    (f) Insure that key personnel have long-term experience in a variety of Government/industry system acquisition activities and institue a career program to enlarge on that experience.
    (g) Minimize management layering, staff reviews, coordinating points, unnecessary procedures, reporting, and paperwork on both the agency and industry side of major system acquisitions.

12. Delegate authority for all technical and program decisions to the operating agency components except for the key agency head decisions of:

    (a) Defining and updating the mission need and the goals that an acquisition effort is to achieve.
    (b) Approving alternative systems to be committed to system fabrication and demonstration.

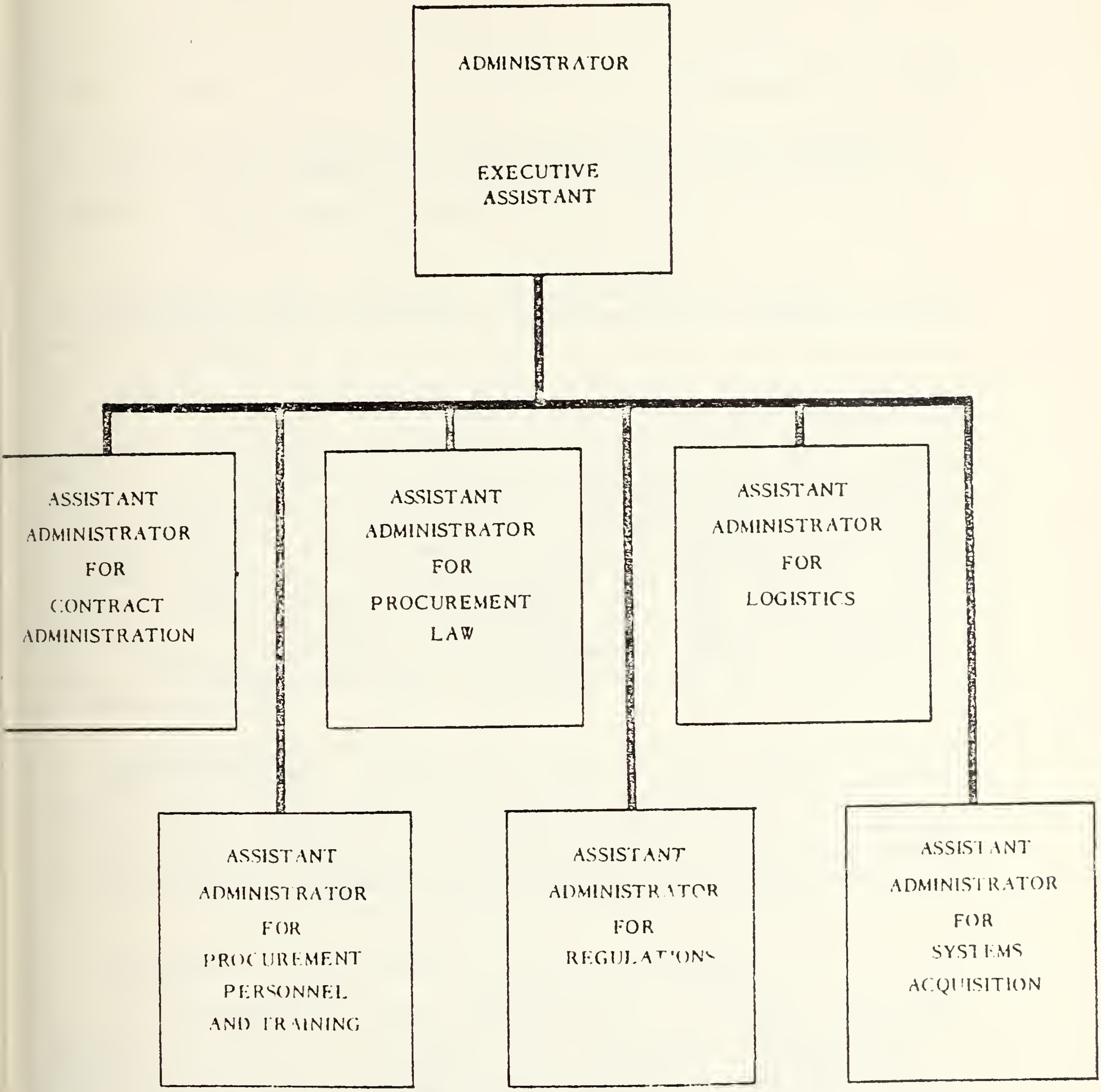
(c) Approving the preferred system chosen for final development and limited production.
(d) Approving full production release.

[REF. 26]

APPENDIX F

OFFICE OF MANAGEMENT AND BUDGET

OFFICE OF FEDERAL PROCUREMENT POLICY


ADMINISTRATOR
EXECUTIVE ASSISTANT
ASSISTANT ADMINISTRATOR FOR CONTRACT ADMINISTRATION
ASSISTANT ADMINISTRATOR FOR PROCUREMENT LAW
ASSISTANT ADMINISTRATOR FOR LOGISTICS
ASSISTANT ADMINISTRATOR FOR PROCUREMENT PERSONNEL AND TRAINING
ASSISTANT ADMINISTRATOR FOR REGULATIONS
ASSISTANT ADMINISTRATOR FOR SYSTEMS ACQUISITION

APPENDIX G

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

April 5, 1976 CIRCULAR NO. A-109

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Major System Acquisitions

1. Purpose. This Circular establishes policies, to be followed by executive branch agencies in the acquisition of major systems.

2. Background. The acquisition of major systems by the Federal Government constitutes one of the most crucial and expensive activities performed to meet national needs. Its impact is critical on technology, on the Nation's economic and fiscal policies, and on the accomplishment of Government agency missions in such fields as defense, space, energy and transportation. For a number of years, there has been deep concern over the effectiveness of the management of major system acquisitions. The report of the Commission on Government Procurement recommended basic changes to improve the process of acquiring major systems. This Circular is based on executive branch consideration of the Commission's recommendations.

3. Responsibility. Each agency head has the responsibility to ensure that the provisions of this Circular are followed. This Circular provides administrative direction to heads of agencies and does not establish and shall not be construed to create any substantive or procedural basis for any person to challenge any agency action or inaction on the basis that such action was not in accordance with this Circular.

4. Coverage. This Circular covers and applies to:

a. Management of the acquisition of major systems, including: ° Analysis of agency missions ° Determination of mission needs ° Setting of program objectives ° Determination of system requirements ° System program planning ° Budgeting ° Funding ° Research ° Engineering ° Development ° Testing and evaluation ° Contracting ° Production ° Program and management control ° Introduction

of the system into use or otherwise successful achievement of program objectives.

b. All programs for the acquisition of major systems even though:

(1) The system is one-of-a-kind.

(2) The agency's involvement in the system is limited to the development of demonstration hardware for optional use by the private sector rather than for the agency's own use.

5. Definitions. As used in this Circular:

a. Executive agency (hereinafter referred to as agency) means an executive department, and an independent establishment within the meaning of sections 101 and 104(1), respectively, of Title 5, United States Code.

b. Agency component means a major organizational subdivision of an agency. For example: The Army, Navy, Air Force, and Defense Supply Agency are agency components of the Department of Defense. The Federal Aviation Administration, Urban Mass Transportation Administration, and the Federal Highway Administration are agency components of the Department of Transportation.

c. Agency missions means those responsibilities for meeting national needs assigned to a specific agency.

d. Mission need means a required capability within an agency's overall purpose, including cost and schedule considerations.

e. Program objectives means the capability, cost and schedule goals being sought by the system acquisition program in response to a mission need.

f. Program means an organized set of activities directed toward a common purpose, objective, or goal undertaken or proposed by an agency in order to carry out responsibilities assigned to it.

g. System design concept means an idea expressed in terms of general performance, capabilities, and characteristics of hardware and software oriented either to

operate or to be operated as an integrated whole in meeting a mission need.

h. Major system means that combination of elements that will function together to produce the capabilities required to fulfill a mission need. The elements may include, for example, hardware, equipment, software, construction, or other improvements or real property. Major system acquisition programs are those programs that (1) are directed at and critical to fulfilling an agency mission, (2) entail the allocation of relatively large resources, and (3) warrant special management attention. Additional criteria and relative dollar thresholds for the determination of agency programs to be considered major systems under the purview of this Circular, may be established at the discretion of the agency head.

i. System acquisition process means the sequence of acquisition activities starting from the agency's reconciliation of its mission needs, with its capabilities, priorities and resources, and extending through the introduction of a system into operational use or the otherwise successful achievement of program objectives.

j. Life cycle cost means the sum total of the direct, indirect, recurring, nonrecurring, and other related costs incurred, or estimated to be incurred in the design, development, production, operation, maintenance and support of a major system over its anticipated useful life span.

6. General policy. The policies of this Circular are designed to assure the effectiveness and efficiency of the process of acquiring major systems. They are based on the general policy that Federal agencies, when acquiring major systems, will:

a. Express needs and program objectives in mission terms and not equipment terms to encourage innovation and competition in creating, exploring, and developing alternative system design concepts.

b. Place emphasis on the initial activities of the system acquisition process to allow competitive exploration of alternative system design concepts in response to mission needs.

c. Communicate with Congress early in the system acquisition process by relating major system acquisition programs to agency mission needs. This communication should follow the requirements of Office of Management and Budget (OMB) Circular No. A-10 concerning information related to budget estimates and related materials.

d. Establish clear lines of authority, responsibility, and accountability for management of major system acquisition programs. Utilize appropriate managerial levels in decisionmaking, and obtain agency head approval at key decision points in the evolution of each acquisition program.

e. Designate a focal point responsible for integrating and unifying the system acquisition management process and monitoring policy implementation.

f. Rely on private industry in accordance with the policy established by OMB Circular No. A-76.

7. Major system acquisition management objectives. Each agency acquiring major systems should:

a. Ensure that each major system: Fulfills a mission need. Operates effectively in its intended environment. Demonstrates a level of performance and reliability that justifies the allocation of the Nation's limited resources for its acquisition and ownership.

b. Depend on, whenever economically beneficial, competition between similar or differing system design concepts throughout the entire acquisition process.

c. Ensure appropriate trade-off among investment costs, ownership costs, schedules, and performance characteristics.

d. Provide strong checks and balances by ensuring adequate system test and evaluation. Conduct such tests and evaluation independent, where practicable, of developer and user.

e. Accomplish system acquisition planning, built on analysis of agency missions, which implies appropriate resource allocation resulting from clear articulation of agency mission needs.

f. Tailor an acquisition strategy for each program, as soon as the agency decides to solicit alternative system design concepts, that could lead to the acquisition of a new major system and refine the strategy as the program proceeds through the acquisition process. Encompass test and evaluation criteria and business management considerations in the strategy. The strategy could typically include: ° Use of the contracting process as an important tool in the acquisition program ° Scheduling of essential elements of the acquisition process ° Demonstration, test, and evaluation criteria ° Content of solicitations for proposals ° Decisions on whom to solicit ° Methods for obtaining and sustaining competition ° Guidelines for the evaluation and acceptance or rejection of proposals ° Goals for design-to-cost ° Methods for projecting life cycle costs ° Use of data rights ° Use of warranties ° Methods for analyzing and evaluating contractor and Government risks ° Need for developing contractor incentives ° Selection of the type of contract best suited for each stage in the acquisition process ° Administration of contracts.

g. Maintain a capability to: ° Predict, review, assess, negotiate and monitor costs for system development, engineering, design, demonstration, test, production, operation and support (i.e., life cycle costs) ° Assess acquisition cost, schedule and performance experience against predictions, and provide such assessments for consideration by the agency head at key decision points ° Make new assessments where significant costs, schedule or performance variances occur ° Estimate life cycle costs during system design concept evaluation and selection, full-scale development, facility conversion, and production, to ensure appropriate trade-offs among investment costs, ownership costs, schedules, and performance ° Use independent cost estimates, where feasible, for comparison purposes.

8. Management structure.

a. The head of each agency that acquires major systems will designate an acquisition executive to integrate and unify the management process for the agency's major system acquisitions and to monitor implementation of the policies and practices set forth in this Circular.

b. Each agency that acquires--or is responsible for activities leading to the acquisition of--major systems will

establish clear lines of authority, responsibility, and accountability for management of its major system acquisition programs.

c. Each agency should preclude management layering and placing nonessential reporting procedures and paperwork requirements on program managers and contractors.

d. A program manager will be designated for each of the agency's major system acquisition programs. This designation should be made when a decision is made to fulfill a mission need by pursuing alternative system design concepts. It is essential that the program manager have an understanding of user needs and constraints, familiarity with development principles, and requisite management skills and experience. Ideally, management skills and experience would include: ° Research and development ° Operations ° Engineering ° Construction ° Testing ° Contracting ° Prototyping and fabrication of complex systems ° Production ° Business ° Budgeting ° Finance. With satisfactory performance, the tenure of the program manager should be long enough to provide continuity and personal accountability.

e. Upon designation, the program manager should be given budget guidance and a written charter of his authority, responsibility, and accountability for accomplishing approved program objectives.

f. Agency technical management and Government laboratories should be considered for participation in agency mission analysis, evaluation of alternative system design concepts, and support of all development, test, and evaluation efforts.

g. Agencies are encouraged to work with each other to foster technology transfer, prevent unwarranted duplication of technological efforts, reduce system costs, promote standardization, and help create and maintain a competitive environment for an acquisition.

9. Key decisions. Technical and program decisions normally will be made at the level of the agency component or operating activity. However, the following four key decision points should be retained and made by the agency head:

a. Identification and definition of a specific mission need to be fulfilled, the relative priority assigned within the agency, and the general magnitude of resources that may be invested.

b. Selection of competitive system design concepts to be advanced to a test/demonstration phase or authorization to proceed with the development of a noncompetitive (single concept) system.

c. Commitment of a system to full-scale development and limited production.

d. Commitment of a system to full production.

10. Determination of mission needs.

a. Determination of mission need should be based on an analysis of an agency's mission reconciled with overall capabilities, priorities and resources. When analysis of an agency's mission shows that a need for a new major system exists, such a need should not be defined in equipment terms, but should be defined in terms of the mission, purpose, capability, agency components involved, schedule and cost objectives, and operating constraints. A mission need may result from a deficiency in existing agency capabilities or the decision to establish new capabilities in response to a technologically feasible opportunity. Mission needs are independent of any particular system or technological solution.

b. Where an agency has more than one component involved, the agency will assign the roles and responsibilities of each component at the time of the first key decision. The agency may permit two or more agency components to sponsor competitive system design concepts in order to foster innovation and competition.

c. Agencies should, as required to satisfy mission responsibilities, contribute to the technology base, effectively utilizing both the private sector and Government laboratories and in-house technical centers, by conducting, supporting, or sponsoring: ° Research ° System design concept studies ° Proof of concept work ° Exploratory subsystem development ° Tests and evaluations. Applied technology efforts oriented to system developments should be performed in response to approved mission needs.

11. Alternative systems.

a. Alternative system design concepts will be explored within the context of the agency's mission need and program objectives--with emphasis on generating innovation and conceptual competition from industry. Benefits to be derived should be optimized by competitive exploration of alternative system design concepts, and trade-offs of capability, schedule, and cost. Care should be exercised during the initial steps of the acquisition process not to conform mission needs or program objectives to any known systems or products that might foreclose consideration of alternatives.

b. Alternative system design concepts will be solicited from a broad base of qualified firms. In order to achieve the most preferred system solution, emphasis will be placed on innovation and competition. To this end, participation of smaller and newer businesses should be encouraged. Concepts will be primarily solicited from private industry; and when beneficial to the Government, foreign technology, and equipment may be considered.

c. Federal laboratories, federally funded research and development centers, educational institutions, and other not-for-profit organizations may also be considered as sources for competitive system design concepts. Ideas, concepts, or technology, developed by Government laboratories or at Government expense, may be made available to private industry through the procurement process or through other established procedures. Industry proposals may be made on the basis of these ideas, concepts, and technology or on the basis of feasible alternatives which the proposer considers superior.

d. Research and development efforts should emphasize early competitive exploration of alternatives, as relatively inexpensive insurance against premature or preordained choice of a system that may prove to be either more costly or less effective.

e. Requests for alternative system design concept proposals will explain the mission need, schedule, cost, capability objectives, and operating constraints. Each offeror will be free to propose his own technical approach, main design features, subsystems, and alternatives to schedule, cost, and capability goals. In the conceptual and

less than full-scale development stages, contractors should not be restricted by detailed Government specifications and standards.

f. Selections from competing system design concept proposals will be based on a review by a team of experts, preferably from inside and outside the responsible component development organization. Such a review will consider: (1) Proposed system functional and performance capabilities to meet mission needs and program objectives, including resources required and benefits to be derived by trade-offs, where feasible, among technical performance, acquisition costs, ownership costs, time to develop and procure; and (2) The relevant accomplishment record of competitors.

g. During the uncertain period of identifying and exploring alternative system design concepts, contracts covering relatively short time periods at planned dollar levels will be used. Timely technical reviews of alternative system design concepts will be made to effect the orderly elimination of those least attractive.

h. Contractors should be provided with operational test conditions, mission performance criteria, and life cycle cost factors that will be used by the agency in the evaluation and selection of the system(s) for full-scale development and production.

i. The participating contractors should be provided with relevant operational and support experience through the program manager, as necessary, in developing performance and other requirements for each alternative system design concept as tests and trade-offs are made.

j. Development of subsystems that are intended to be included in a major system acquisition program will be restricted to less than fully designed hardware (full-scale development) until the subsystem is identified as a part of a system candidate for full-scale development. Exceptions may be authorized by the agency head if the subsystems are long lead time items that fulfill a recognized generic need or if they have a high potential for common use among several existing or future systems.

12. Demonstrations.

a. Advancement to a competitive test/demonstration phase may be approved when the agency's mission need and program objectives are reaffirmed and when alternative system design concepts are selected.

b. Major system acquisition programs will be structured and resources planned to demonstrate and evaluate competing alternative system design concepts that have been selected. Exceptions may be authorized by the agency head if demonstration is not feasible.

c. Development of a single system design concept that has not been competitively selected should be considered only if justified by factors such as urgency of need, or by the physical and financial impracticality of demonstrating alternatives. Proceeding with the development of a noncompetitive (single concept) system may be authorized by the agency head. Strong agency program management and technical direction should be used for systems that have been neither competitively selected nor demonstrated.

13. Full-scale development and production.

a. Full-scale development, including limited production, may be approved when the agency's mission need and program objectives are reaffirmed and competitive demonstration results verify that the chosen system design concept(s) is sound.

b. Full production may be approved when the agency's mission need and program objectives are reaffirmed and when system performance has been satisfactorily tested, independent of the agency development and user organizations, and evaluated in an environment that assures demonstration in expected operational conditions. Exceptions to independent testing may be authorized by the agency head under such circumstances as physical or financial impracticability or extreme urgency.

c. Selection of a system(s) and contractor(s) for full-scale development and production is to be made on the basis of (1) system performance measured against current mission need and program objectives, (2) an evaluation of estimated acquisition and ownership costs, and (3) such factors as

contractor(s) demonstrated management, financial, and technical capabilities to meet program objectives.

d. The program manager will monitor system tests and contractor progress in fulfilling system performance, cost, and schedule commitments. Significant actual or forecast variances will be brought to the attention of the appropriate management authority for corrective action.

14. Budgeting and financing. Beginning with FY 1979 all agencies will, as part of the budget process, present budgets in terms of agency missions in consonance with Section 201(i) of the Budget and Accounting Act, 1921, as added by Section 601 of the Congressional Budget Act of 1974, and in accordance with OMB Circular A-11. In so doing, the agencies are desired to separately identify research and development funding for: (1) The general technology base in support of the agency's overall missions, (2) The specific development efforts in support of alternative system design concepts to accomplish each mission need, and (3) Full-scale developments. Each agency should ensure that research and development is not undesirably duplicated across its missions.

15. Information to Congress.

a. Procedures for this purpose will be developed in conjunction with the Office of Management and Budget and the various committees of Congress having oversight responsibility for agency activities. Beginning with FY 1979 budget each agency will inform Congress in the normal budget process about agency missions, capabilities, deficiencies, and needs and objectives related to acquisition programs, in consonance with Section 601(i) of the Congressional Budget Act of 1974.

b. Disclosure of the basis for an agency decision to proceed with a single system design concept without competitive selection and demonstration will be made to the congressional authorization and appropriation committees.

16. Implementation. All agencies will work closely with the Office of Management and Budget in resolving all implementation problems.

17. Submissions to Office of Management and Budget. Agencies will submit the following to OMB:

a. Policy directives, regulations, and guidelines as they are issued.

b. Within six months after the date of this Circular, a time-phased action plan for meeting the requirements of this Circular.

c. Periodically, the agency approved exceptions permitted under the provisions of this Circular.

This information will be used by the OMB, in identifying major system acquisition trends and in monitoring implementations of this policy.

18. Inquiries. All questions or inquiries should be submitted to the OMB, Administrator for Federal Procurement Policy. Telephone number, area code, 202-395-4677.

APPENDIX H

STATUS OF OMB CIRCULAR A-109 IN DEPARTMENT OF DEFENSE

The following letter from Senator John L. McClellan, Chairman of the Senate Armed Services Committee, to Honorable Robert Parker, acting director of DDR&E, regarding the status of several DOD programs in compliance with OMB Circular A-109, is an indication of the top level interest of the legislative and executive branches. The letter is followed by two enclosures, one with questions regarding A-109 compliance and the other a list of DOD programs in question. Following the enclosures is OFPP's interpretation of DDR&E's response.

March 17, 1977

The Honorable Robert Parker
Acting Director of Defense Research and
Engineering
Department of Defense
Washington, D. C. 20301

Dear Mr. Parker:

As you are aware, the Defense Department is in the process of putting into effect new weapons acquisition policies to comply with the requirements of Office of Management and Budget Circular A-109, issued last year. New DoD Directives 5000.1, 5000.2 and 5000.3 have been issued, and both former Secretary Clements and Secretary Brown have indicated the policies would be implemented with new programs beginning in 1977.

In order for the Committee to fully consider the FY 1978 budget request, we would like to assess whether or not new programs are being conducted in compliance with the requirements of Circular A-109. In general, all new starts contained in the FY 1978 budget request, or those at an early stage, should be conducted in accordance with the new policies. Attached, however, is a sample list of specific programs which the Committee would like to examine.

For each of the programs on the attached list, it would be helpful to the Committee's deliberations if you would provide written replies to the attached set of questions.

We would appreciate having your responses within thirty days.

With kind regards, I am

Sincerely,

/s/

John L. McClellan
Chairman

JLM:ajm

QUESTIONS FOR EACH PROGRAM ON A-109 COMPLIANCE

General:

(1) (a) Has the program office been instructed to comply with the provisions of A-109 and Directives 5000.1 and 5000.2? When, by whom, in what form?

(b) Have program personnel been briefed on A-109 requirements and revisions to Directives 5000.1 and 5000.2?

Mission Need:

(2) (a) Has the Office of the Secretary of Defense conducted the equivalent of a "Milestone-Zero" decision to confirm the need for increased mission capability? When, by whom, in what form?

(b) Has a Mission Element Need Statement (MENS) been prepared and approved? If not, when?

(3) Has the committee received a complete mission justification for this program or activity?

(a) What generic kind of mission capability is being sought?

(b) Under what scenarios would the mission capability be used and where?

(c) How do threat projections and defense strategy combine to require increased mission capability?

(d) What other program activities are underway which would also contribute to this mission capability (complete lists):

(i) RDT&E programs

(ii) Procurement programs

Competition and Source Selection:

(4) Has (will) the program presented industry with a mission-based RFP, with free latitude to propose system concepts, technological approaches and design features?

(5) Is the program structured to maintain the independent integrity of each proposed alternative and not dictate common system design features in a baseline system requirement?

(6) Is the program structured to permit sustained, incremental development competition in order to test, evaluate and eliminate less attractive alternatives?

(7) Is the program structured to lead to the competitive system demonstration of remaining contractors in an operational mission environment? If future resource constraints appear to preclude competitive system demonstration, will competition be extended to the maximum extent and formal notification be given to the committee as to why source selection cannot rest on system demonstration?

(8) Are there any provisions of Circular A-109 that the program will not comply with as it moves forward from its current status?

ARMY PROGRAMS

63319A	Conventional Airfield Attack Missile (CAAM)
63602A	Advanced Land Mobility System Concepts
63624A	Mobility
63301A	Advanced Forward Area Air Defense System
63612A	Advanced Multi-Purpose Missile System (AMPM)
63303A	Surface-to-Surface Missile Rocket System
63725A	Remotely Piloted Vehicles/Drones

NAVY PROGRAMS

63611M	Landing Vehicle Assault
63310N	Surface-to-Surface Missile Development
63311N	Integral Rocket Ramjet
63365N	Surface Anti-Submarine Warfare Standoff Weapon
63564N	Ship Development (Advanced)
63309N	Shipboard Intermediate Range Combat System (SIRCS)
63265N	Remote Piloted Vehicles
63306N	Advanced Air Launched Air-to-Surface Msl System
63257N	V/STOL Aircraft Development
63264N	All-Weather Attack
63369N	Air-to-Ground Standoff Weapons
63610N	Advanced ASW Torpedo
63763N	Aerospace Ocean Surveillance
64265N	CH-53F
63215N	Land-Based Support Aircraft (Advanced)
63254N	Air Anti-Submarine Warfare
Proj. W0472-AS	Advanced ASW Patrol Aircraft Weapon System

AIR FORCE PROGRAMS

63227F	Advanced Simulator Development
63739F	Advanced Drone/RPV Development
63242F	Advanced Intercpetor Technolgoy
63439F	Advanced Space Applications Program
64312F	M-X
63230F	Combat Aircraft Technolgoy
63304F	Within Visual Range Air-to-Air Missile
63316F	Advanced Medium Range Air-to-Air Missile (AMRAAM)
64209F	RF-X

1. Nine programs are technology base efforts and may not result in a major system acquisition:

63725A	Remotely Piloted Vehicles/Drones
63265N	Remotely Piloted Vehicles
63739F	Advanced Drone/RPV Development
63227F	Advanced Simulator Development
63306N	Advanced Air-Launched ASM System
63602A	Advanced Land Mobility System Concepts
63242F	Advanced Interceptor Technology
63439F	Advanced Space Application Program
63564N	Advanced Ship Development

2. Six of the 32 programs are not considred to be "major" programs by Defense:

63319A	Conventional Airfield Attack Missile
632 4N	All-Weather Attack-Interdiction
63309N	Air-to-Ground Standoff Weapon
63310N	Surface-to-Surface Missile Development
63365N	Surface ASW Standoff Weapon
63624A	Mobility

3. Four of the 32 programs, even though considered to be "major" programs by Defense, will not comply with A-109 because they have already passed Milestones I and II:

64312F	M-X
63301A	Advanced Forward Area Air Defense System
63303A	General Support Rocket System
64265N	CH53F

4. Eight of the 32 programs will follow A-109 with no exceptions:

63612A	Advanced Multi-Purpose Missile System
63611N	Landing Vehicle Assault
63304F	Within Visual Range Air-to-Air Missiles
63230F	Combat Aircraft Technology
64209F	RF-X
63215N	Land-Base Support Aircraft
63257N	V/STOL Aircraft Development
63309N	SIRCS

5. Five of the 32 programs are not going to be fully compliant with A-109, even though no DSARC decisions have been made and no RFP's have been issued to industry:

63316F	Joint Beyond Visual Range Missle
63254N	Air ASW
63763N	Aerospace Ocean Surveillance
63610N	Advanced ASW Torpedo

Mission Element Need Statement
Outline

I. Mission

A. Mission Area. The Mission Area Is Identified. (A Mission Element Could Conceivably Be in Response to or a Part of More Than One Mission Area. When This Is the Case, the Multiple Mission Areas Are Identified).

B. Mission Element Need Task. This Section Is Identifiable as a Subset of the Mission Area. This Need Is Stated in Terms of Functional Capabilities Desired and Not the Characteristics of a Hardware or Software System.

II Threat

The Projected Threat is Assessed Against Which a Capability is Required Over the Time Period That the New Capability Would Be in the Field. This Section of the Document Includes Comments by the Defense Intelligence Agency Either Through the Services or OSD Action. Quantification of This Threat in Numbers and Capability, Whenever Possible, Is Described.

Mission Element Need Statement
Outline

III. Existing and Planned Capabilities To Accomplish This Mission Element Need Task

- A. Briefly Summarizes the Existing DoD and Allied Capability To Accomplish the Mission. (This Must Not Be a Narrow One-Service View When Looking Across Multi-Facetted Areas Such as Air Defense or Defense Suppression.) This Section Reference Existing Documentation Such as DCPs or Force Structure Documents To Keep This Section Manageable.
- B. Agency Component(s) Involved

IV. Assessment

The Need Is Assessed on One or More of the Following Terms:

- A. Deficiency in the Existing Capability, e.g., Excessive Manpower, Performance, Etc.;
- B. Technological Opportunity;
- C. Force Size or Physical Obsolescence of Equipment;
- D. Cost Savings Opportunity, Life Cycle Cost Potential for Savings;
- E. Vulnerability of Existing Systems; or,
- F. Etc.

Mission Element Need Statement Outline

V. Constraints
  A. Value or Worth of Meeting The Need.
  B. Relationship to Overall Service Budget.
  C. Relative Priority Within The Mission Area
  D. Logistics Considerations.
  E. NATO Standardization/Commonality.
  F. Timing of Need.
  G. Etc.

VI. Impact of Staying With the Present System
  A. Ability To Meet the Projected Threat. Impact on Combat Effectiveness.
  B. Cost of Increasing Quantity of Existing Equipment to a Level That Meets the Threat.
  C. Cost of Maintaining Equipment With Low Availability.
  D. Etc.

APPENDIX J

THE SECRETARY OF THE NAVY
WASHINGTON, D. C. 20350

13 JUN 77
ADVANCE COPY

he Honorable Lawton M. Chiles, Jr.
nited States Senate
ashington, D. C. 20510

ear Senator Chiles:

In accordance with your request, this letter confirms he assurances I have given you on the telephone that the avy Department supports and will continue to support using he procedures of OMB Circular A-109 generally, and supports oing so most specifically in the SIRCS Program. There are any good reasons why these procedures are appropriate for his program. Further, inasmuch as this program has, from he beginning, been advertised as an "A-109 Program" (to oth the Congress and to industry), I believe the program hould continue to be so managed unless there are compelling easons to do otherwise. In particular, inasmuch as OMB ircular A-109 embodies the acquisition process reform so trongly directed by the Congress, and inasmuch as industry as been participating in good faith in this effort, for he Congress to direct termination of the process already begun efore an assessment of progress is even available will be seen y many as breaking faith with both industry and the Navy.

I am further distressed that the reason given in the onference report for directing deviation from the A-109 rocedures seems to be based on a misunderstanding about he Navy's flexibility in the SIRCS program. The enclosed oint paper discusses this point in more detail.

I understand that you are now considering killing the rogram because of the directed deviation from A-109 rocedures. I would hope that you could find, instead, way to correct the situation so that the Navy might roceed legally in the letter and spirit of A-109, perhaps y appropriate superseding language in the Appropriations ill. I would welcome an opportunity to discuss this urther with you, with the Chairman of the Appropriations r the Authorization Committees, or with anyone else you elieve might assist you in rectifying the situation.

Sincerely,

W. Graham Claytor, Jr.

CDR G.M. [illegible]
CP-352P, X52079
21 June 1977

SHIPBOARD INTERMEDIATE RANGE COMBAT SYSTEM (SIRCS)

JRPOSE: To interpret, in part, the accuracy of the language contained in the 20 June 1977 Congressional Record by the House Conferees concerning A-109 implications to SIRCS.

TATEMENT: "Under the program as presently structured the Navy could not select the most desirable components from individual contractors but would have to fund continued development of the complete systems of two of the three contractors." Congressional record - House, 20 June 1977, page H6203. (TAB A)

ISCUSSION: ° Navy's plan to date has been to evaluate the total SIRCS proposed by each contractor and to select for validation the two contractor concepts that best fulfill the mission need:

° The Navy in SIRCS is deliberately seeking to optimize a system rather than individual components. Competitive development of this total system seeks to maximize produceability and affordability.

° Navy's compliance with the spirit of the Commission on Government Procurement and Circular No. A-109 has been found consistent with the commission's intent. (GAO Report of 24 Jan 77)

° Contractual matters between the Navy and SIRCS contractors are handled in the same fashion as with any other government contracts.

ONCLUSIONS: ° The statement in the Congressional Record as it now stands is inaccurate. Although under the present Navy SIRCS acquisition plan no selection of individual contractor components is specifically planned, the Navy can select the most desirable components from individual contractors to formulate the optimum SIRCS, provided such components selected are not proprietary. Such selected components would be substituted within the winning contractor's total system design.

° The above is operative for component selection after a validation phase winner has been established. Selection of components from among offerors prior to validation is inconsistent with A-109.

APPENDIX K

SIRCS

LABORATORY-ASSIGNED RESPONSIBILITIES

	Principal Responsibility	Associate Responsibility
NSWC	Combat System Engineering Combat System Integration Warfare Analysis System Simulation Cost Engineering Combat System Software Computers Guns Systems Gun Fire Control EO Fire Control (SEAFIRE) Guided and Unguided Projectiles Combat System Configuration Management	EO Technology Missile Systems Missile Launchers System Sensors Command and Control Missile Fire Control NTDS, TDS Support & Maintenance Technical Evaluation Test Planning Ship Installation Adversary Developments Responsive Threats
NWC	Missile Systems Missile Technology Missile Launchers Missile Fire Control	Combat System Engineering Combat System Integration Sensor Systems Cost Engineering Warfare Analysis Simulation Technical Evaluation Test Planning Adversary Developments Responsive Threats
NOSC	Command and Control Communications NTDS, TDS	EO Technology Combat System Integration EW Systems Computers Simulation System Software Radar Technical Evaluation Ship Installation Adversary Developments

LABORATORY-ASSIGNED RESPONSIBILITIES

	Principal Responsibility	Associate Responsibility
NRL	o Sensor Systems o Radars o EW o EO Technology	o EO Fire Control o Simulations o Technical Evaluation o Adversary Developments
NSWSES	o Support & Maintenance o Technical Evaluation o Test Planning o Ship Installation	o Guided & Unguided Projectiles o Missile Systems o Warfare Analysis o Simulation o Combat System Engineering o Configuration Management o Adversary Developments o Gun Systems o Gun Fire Control
APL	o Adversary Developments o Responsive Threats	o Missile Systems o Combat System Engineering o Warfare Analysis o Radar o Simulation o TDS o Combat System Integration o Software o Missile Technology o Missile Fire Control o Communications o NTDS, TDS o Technical Evaluation o Gun Systems o Gun Fire Control

SIRCS
LABORATORY
RESPONSIBILITY MATRIX

TECHNICAL FUNCTION	NSWC	NWC	NOSC	NRL	NSWSES	APL
Combat System Engineering	P	A			A	A
Combat System Integration	P	A	A			A
Warfare Analysis	P	A			A	A
System Simulations	P	A	A	A	A	A
Cost Engineering	P	A				
Combat System Software	P		A			A
Computers	P		A			
Gun Systems	P				A	A
Gun Fire Control	P				A	A
EO Fire Control (SEAFIRE)	P		A	A		
Guided & Unguided Projectiles	P				A	
Combat System Configuration Mgmt.	P				A	
Missile Systems	A	P			A	A
Missile Technology		P				A
Missile Launchers	A	P				
Missile Fire Control	A	P				A
Command and Control	A		P			
Communications			P			A
NTDS, TDS	A		P			A
Sensor Systems	A	A		P		
Radars			A	P		A
EW			A	P		
EO Technology	A		A	P		
Support and Maintenance	A				P	
Technical Evaluation	A	A	A	A	P	A
Test Planning	A	A			P	
Ship Installation	A		A		P	
Adversary Developments	A	A	A	A	A	P
Responsive Threats	A		A			P

APPENDIX L

SIRCS CONTRACTORS

PRIME	TEAM MEMBER	SUBCONTRACTORS
McDonnell Douglas	Sanders Sperry Gyro Texas Instruments	Amherst British Aircraft (UK) FMC/Northern Ordnance General Dynamics General Electric (Burlington) Hughes Motorola Rockwell
Raytheon	Battelle Lockheed Electronics Sperry Univac	Assurance Technology FMC/Northern Ordnance General Electric (Burlington) TRW
RCA	Computer Sciences J.J. McMullen Kuras-Alterman Martin Marietta	Emerson Electronic FMC/Northern Ordnance Marconi (UK) Motorola

APPENDIX M

DESCRIPTION OF GOVERNMENT-FURNISHED INFORMATION

1. Operational Requirement Expansion--details requirements, provides a basis for weapon performance trade-offs, and discusses costing philosophy.

2. Threat and Target Baseline--describes representative threats and targets to be used in SIRCS design and in predicting system performance.

3. Environment Baseline--identifies and defines certain physical environmental factors, discusses electromagnetic compatibility requirements, and includes a discussion of related military standards.

4. Platform Baseline--describes the flow of command and physical and other characteristics of representative ships which are candidates to receive SIRCS.

5. Fleet Weapon System Baseline--details all elements of surface- and air-related combat systems projected for the fleet.

6. Fleet Composition Baseline--lists ships and combat systems planned to be in service.

7. Cost Analysis Guide--provides common definitions, assumptions, and formats for contractor cost analysis. The Cost Analysis Guide focuses on "design-to-cost" and "life-cycle-cost" concepts and emphasizes the importance of cost.

8. Scenario Baseline--is a set of detailed scenarios for use in comprehensive evaluation of proposed systems.

9. Navy T&E [test and evaluation]/Target/Range Resource Baseline--describes test and evaluation resources available for concept validation and full-scale development of SIRCS.

10. GFI [Government-furnished information] Library--includes additional relevant information and regulations and will be updated periodically.

APPENDIX N

EVALUATION CRITERIA

The criteria for evaluation shall consist of, in decreasing order of importance, a System Concept Factor, a Validation Phase Plan Factor, and a Validation Phase Cost Factor.

A. SYSTEM CONCEPT FACTOR

The SIRCS Concept proposed by the contractor will be evaluated in terms of the degree to which, in the judgment of the Government, it offers a technically and militarily sound, affordable and cost-effective method of achieving the goals set forth in the Operational Requirement (ORSH44) and the other requirements of the Concept Formulation contract. Three elements will be considered: System Military Worth, System Cost, and Developmental Risk. System Military Worth and System Cost are of equal importance and each is of greater importance than Development Risk.

1. System Military Worth

The purpose of this element is to evaluate the merit of the contractor's proposed concept from a technical and military ooint of view. The following will be considered. Sub-elements a and b are of equal importance and each is of greater importance than each of the other sub-elements, all of which are of equal importance.

a. The degree to which the proposed system can be expected to meet the requirements for separate engagements in the air, surface, and shore warfare areas, and for simultaneous engagements in all warfare areas (as specified in the OR and OR Expansion).

b. The degree to which the proposed system can be expected to meet the requirements, specified in the OR and the OR Expansion, for each of the five baseline platforms.

c. The merit of the contractor's identification and trade-offs of real world considerations, such as weapon system performance, schedule, technology, environment, cost, RMA, ship integration, system support and manpower, and risk, used in developing his SIRCS Concept.

d. The degree to which the proposed system can be expected to meet the availability requirements in the OR and OR expansion; and the merit of the contractor's proposed reliability program.

e. The merit of the proposed shipboard manning concept.

f. The merit of the contractor's modularity concept.

g. The merit of the contractor's installation concept.

h. The merit of the contractor's platform considerations concept.

i. The merit of the contractor's maintenance and support concept (maintenance engineering, system support planning, and system safety).

j. The growth potential of the proposed system.

k. The quality of the system specifications submitted for each platform type.

2. System Cost

The purpose of this element is to evaluate the total life cycle cost to the Navy of acquiring and operating the system proposed by the contractor. The following sub-elements are all of equal importance.

a. The affordability of the proposed system as reflected in its life cycle cost. In making this determination the realism, soundness, and credibility of the contractor's life cycle cost estimate will be taken into account.

b. The merit of the contractor's analysis, and the results thereof, of the sensitivity of the proposed system to variations in funding available for the program.

c. The merit of the contractor's recommended DTC goals and the rationale therefor.

d. The merit of the contractor's trade-off studies made in optimizing system LCC effectiveness.

e. The degree to which the contractor's proposed management techniques, procedures, and schedule alternatives and systems for implementation and control of the DTC effort can be expected to minimize the chance of cost overrun and maximize the probability of achievement of an affordable system.

3. Developmental Risk

The purpose of this element is to assess the degree to which the contractor's proposed system is likely to achieve its predicted performance within the predicted cost and schedule goals. The following sub-elements, all of which are of equal importance, will be considered.

a. The degree of rish associated with the proposed system. In making this determination the realism, soundness, and credibility of the contractor's assessment of risk will be taken into account.

b. The merit of the contractor's approach to minimize risk and uncertainty associated with the recommended system.

c. The merit of the contractor's proposed Test, Evaluation, and Demonstration program.

d. The merit of the proposed alternatives to be implemented in the event of non-success of the higher-risk items in the recommended system/subsystems.

B. VALIDATION PHASE PLAN FACTOR

The contractor's Validation Phase Plan will be evaluated in terms of the degree to which it offers a technically sound and practical method for demonstrating the validity and viability of the proposed system concept during the Validation Phase of SIRCS development. Two elements in descending order of importance, will be considered: Technical and Management.

1. Technical

The purpose of this element is to evaluate the contractor's plan to evolve a system design and to demonstrate that his design will perform as predicted. The end product will be a set of specifications which will provide a basis for proceeding into the engineering development phase with confidence. The following sub-elements, all of equal importance, will be considered.

a. The degree to which the Validation Phase Plan can be expected to result in the development of specifications

for the system and major subsystems in accordance with MIL-STD-490 and the degree to which that specification can be expected to provide a sound basis for proceeding to Full Scale Development.

b. The practicality and the efficacy of the experiments that the contractor proposes be performed during the Validation Phase and the degree to which these proposed experiments can be expected to prove the validity of the proposed concept.

c. The merit of the contractor's proposed schedule for the Validation Phase.

2. Management

The following items, of equal importance, will be considered.

a. The degree of control to be exercised by the project manager over the Validation Phase effort, including sub-contractors, and his relation to corporate top management.

b. The degree to which company facilities will be made available including the type and security thereof.

c. The degree to which project personnel are identified, including their authority, responsibility, and relation to the project manager.

d. The merit of the proposed work breakdown structure.

e. The acceptability of the contractor's approach to meeting the objectives of DOD Instruction 7000.2, "Performance Measurement for Selected Acquisitions."

f. The merit of the proposed plan for implementation of Design-to-cost during the Validation Phase.

g. The merit of the proposed approach to interface control and configuration management.

h. The merit of the contractor's proposed approach to data management.

i. The merit of the contractor's identification, discussion, and proposed solutions to management, schedule, and cost problems which may occur during the Validation Phase.

C. VALIDATION PHASE COST/FEE

The cost (including fee) to the Government of the Validation Phase shall be the third factor. In evaluating the offeror's proposal, his proposed estimated cost and the realism, reasonableness and validity thereof shall be taken into account.

APPENDIX O

SHIPBOARD INTERMEDIATE RANGE COMBAT SYSTEM VALIDATION PHASE TECHNICAL STRATEGY

INTRODUCTION

This paper defines the overall technical strategy to be employed by the SIRCS Program Office during the Validation Phase of the system. The strategy is expressed through a consideration of three points: Validation Phase Objective, Management Responsibilities, and the Validation Phase Proposal.

OBJECTIVE

The technical objective of the SIRCS Validation Phase is to reduce system risk to a level acceptable to the Navy and sufficient to proceed to Milestone II. To achieve adequate risk reduction, system demonstration will be required. This is essential in view of the fact that the system level requirements necessitate consideration of the component integration and combat management as critical elements. This objective is also in keeping with the current, and future, evaluation philosophy of measuring worth relative to the total system performance.

The system demonstration will be comprised of verification of the total system: surveillance, detection and identification, management, control and engagement, including both software and hardware. The demonstration must be composed, at a minimum, of a system operational effectiveness simulation based on actual tests of all new items, data provided by the Navy on all components not under Contractor control, and all major software algorithms.

The system demonstration will be conducted at a Navy Land-Base Test Site, as will all subsystem level tests providing data to the system demonstration. A single LBTS will be provided for use by both SIRCS Contractors to use. This site will be the primary location for all GFE.

MANAGEMENT

Responsibilities will be divided between the Navy and the SIRCS Contractors as outlined below.

The Navy will be responsible for the following:

- Specify system cost/performance requirements;
- Approve all system level cost/performance changes proposed by Contractor that exceeds agreed-upon limits;
- Define system demonstration model;

- Approve all test plans;
- Accept results of: all system demonstrations, subsystem tests and critical item tests;
- Provide guidance, as required, on operational matters such as:
  - Integration requirements,
  - Tactical doctrine,
  - System interface configuration,
  - Manning and training,
  - Funding/budgeting levels,
- GFI maintenance;
- LBTS location, design, construction, and operation;
- Monitor on-going DOD programs impacting SIRCS.

The Contractor will be responsible for:

- System design;
- System fabrication;
- Propose and manage test plans and schedules;
- Conduct of tests;
- Analysis and report of tests;
- Analysis of:
  - System operational effectiveness,
  - Integration and installation plans,
  - Reliability, maintainability, and availability requirements,
  - Hazards, safety, and human factors,
  - Life-cycle cost/design-to-cost,
  - Risk,

  - Manning and training requirements,
  - Documentation,
- System specification;
- Cost/performance status reports.

PROPOSAL

The Validation Phase Proposal will contain a contractual document between the Navy and the Contractor that clearly and explicitly defines the job to be accomplished. It will clearly show the overall objective of the Validation Phase. It will detail respective responsibilities of the Navy and the Contractor. It will provide a statement of work that includes specifically defined quantifiable objectives, together with appropriate milestones that can be directly measured. It will be constructed in accordance with the Work Breakdown Structure. The proposal will define the evolution of the System Specifications during the Validation Phase.

The statement of work will be developed through an informal interactive working relationship between the SIRCS Program Office and the SIRCS Contractors.

APPENDIX P

HOUSE OF REPRESENTATIVES
95TH CONGRESS
1ST SESSION
REPORT NO. 95-194

SHIPBOARD INTERMEDIATE RANGE COMBAT SYSTEM (SIRCS)

Committee Recommendation

The committee recommends deletion of the Navy's entire request for $3.894 million.

Basis for Committee Action

The Shipboard Intermediate Range Combat System is intended to provide the Navy with an intermediate range, combat system capable of engaging ships, aircraft and incoming missiles.

The committee has, during the past several years, expressed serious concern over the Navy's lack of weapon control capability that in many instances severely constrains offensive strike capability. Industry and government laboratories have developed excellent sensors such as detection radars, tracking radars, infrared tracking sensors, computers, stabilization systems, gun mounts and missile launchers and numerous other subsystems that can be combined to replace the current inventory of incapable weapon control systems within a brief period of time and at a reasonably low cost. The SIRCS would not provide improved weapon control capability for many years to come. Navy cost estimates to reach an initial operational capability with SIRCS total over $650 million.

Navy representatives repeatedly have stated that other high priority programs in the Navy preclude near term weapon control improvement efforts. The committee is concerned that the Department of Defense would allow the poor state of weapon control to continue into the next decade in order to fund a system that is many years in the future. This philosophy could be understood in the absence of solutions to the current problem; however, hardware exists, solutions exist and the cost of these solutions is practical and affordable.

The projected cost of SIRCS is also difficult to comprehend. The AEGIS system, a more complex, long range system, was developed for a fraction of the proposed cost of the SIRCS.

SENATE ARMED SERVICES COMMITTEE OBSERVATIONS ON MULTI-SERVICE PROGRAMS - MAY 1977

COMMITTEE OBSERVATIONS ON MULTISERVICE PROGRAMS

Air-to-Air Missiles

Current Budget Program

The Air Force, Navy, and Marine Corps fighter aircraft currently operate with three types of air-to-air missiles; the short range dogfight Sidewinder heat-seeking missile; the medium range all-weather Sparrow radar-guided missile; and the long range Phoenix interceptor missile (presently used only on the Navy F-14). The "Sea Sparrow" also is used as a surface-to-air missile on Navy ships, and a variant of the Sidewinder is used as a SAM missile by the Army.

The committee recommends approval of the procurement requests for Sidewinder, Sparrow, and Phoenix.

Research and development requests for fiscal year 1978 for air-to-air missiles include $5.9 million for improvements to the -9L Sidewinder plus $5.9 million for a new dogfight missile to replace the Sidewinder; $18.9 million for an Advanced Monopulse Seeker for the Sparrow, $6.4 million for the NATO Sea Sparrow, plus $23.6 million for a new Advanced Medium Range Air-to-Air Missile (AMRAAM) to replace the Sparrow; $7.1 million for Phoenix improvements; and $3.9 million for studies of a Shipboard Intermediate Range Combat System (SIRCS) program for the Navy which would include a new missile to replace the Sea Sparrow. There also is general supporting technology effort for an Advanced Intercept Missile (AIM), which would replace the Phoenix and which could be used by both the Air Force and Navy, although no specific program has been started yet. In summary, there are product improvement efforts on the existing missiles and also funding on replacement programs for all of the existing missiles.

Committee Considerations

The committee believes that the status of the present air-to-air missile programs is quite encouraging.

The Sidewinder-9L is proving in operational tests to be a superior weapons system. Both the Air Force and Navy are procuring this missile in common after years of using different versions of the basic Sidewinder.

The Sparrow missile has known and much-publicized operational shortcomings in its present-7F seeker, but competitive prototype tests of the new monopulse seeker have been extremely favorable. The monopulse Sparrow promises to be a superior missile for the 1980s time period. Both the Air Force and Navy will use the monopulse Sparrow, which will retain commonality in their medium range inventory.

The Phoenix has been extremely successful in operational trials to date and the improvement program should make it better.

Committee Recommendations

The committee is concerned that the proposed new development programs could lead to a proliferation of different missile types in the 1980s, as contrasted to present use of 3 basic designs. Proliferation of air-to-ground weapons has been a problem in the past and potentially it could occur with air-to-air missiles.

The committee recommends that careful analyses of presently on-going operational tests on dogfight missiles (called AIMVAL/ACEVAL) be completed to determine if any new program is warranted or if the -9L should be further improved. The committee deleted the $3.9 million requested for a new program as being premature, and further insists that any new dogfight missile be used in common by both the Air Force and Navy and be jointly funded.

The committee believes that the request to start AMRAAM prototypes this year also is premature and deleted the $23.6 million requested. The implied requirements for 2 new missiles to replace the Sparrow (AMRAAM and SIRCS) should be re-evaluated during the coming year, as should the possibility of combining the AIM Intercept Missile into the Sparrow replacement. There is $5.0 million carry-over available from fiscal year 1977 in the AMRAAM account that can be used for this purpose, as well as the SIRCS funds approved by the committee.

The committee also recommends that the Department of Defense re-evaluate the use of the present -9L Sidewinder fuse to see if lower cost fuses such as the Army's DIDO might not be more cost-effective.

CONGRESSIONAL RECORD - SENATE

May 17, 1977

SHIPBOARD INTERMEDIATE RANGE COMBAT SYSTEM (SIRCS)

The Navy requested $3.9 million to continue development of the Shipboard Intermediate Range Combat System (SIRCS), an advanced shipboard close-in air defense and fire control system for the early 1990's. The House deleted all of the authorization, expressing concern over the high development cost for SIRCS which apparently would be funded at the expense of near and intermediate term improvements to Navy fire control systems. The Senate added $13.0 million to the budget request in a floor amendment, providing $3.0 million for the Advanced Medium Range Air-to-Air Missile (AMRAAM) commonality studies and $13.9 million for the SIRCS program contract efforts.

June 20, 1977

Sec. 203. Of the funds authorized to be appropriated under Section 201 for the Navy (including the Marine Corps) for research, development, test, and evaluation, an amount not to exceed $3,894,000 shall be available only for (1) defining a set of design specifications for the Shipboard Intermediate Range Combat System (SIRCS) program, and (2) conducting an open competition, to be conducted after such design specifications have been defined and to be based on such specifications, to select a contractor or contractors for the advanced development phase of such program. In developing such design specifications, the Secretary of the Navy shall include the best features of the designs developed by the three contractors which have been selected for the program before the date of enactment of this Act and such other features as the Secretary considers appropriate. A contract entered into under the competition required by this section may be for development of the entire system or for development of any independent subsection of the system.

CONGRESSIONAL RECORD - HOUSE

June 20, 1977

Shipboard Intermediate Range Combat System (SIRCS)—

The Navy requested $3.9 million to continue development of the Shipboard Intermediate Range Combat System (SIRCS), an advanced shipboard close-in air defense and fire control system for the early 1990's. The House deleted all of the authorization, expressing concern over the high development cost for SIRCS which apparently would be funded at the expense of near and intermediate term improvements to Navy fire control systems. The Senate added $13.0 million to the budget request in a floor amendment, providing $3.0 million for the Advanced Medium Range Air-to-Air Missile (AMRAAM) commonality studies and $13.9 million for the SIRCS program contract efforts.

The SIRCS program has followed the acquisition strategy of the Office of Management and Budget Circular A-109 and intends that two contractors be funded to build competitive prototypes of a new radar and new missile integrated with a fire-control computer system for shipboard use. The Navy presently is evaluating proposals submitted by three separate contractors for these components. Under the program as presently structured the Navy could not select the most desirable components from individual contractors but would have to fund continued development of the complete systems of two of the three contractors. This acquisition approach could cause continued development of less than optimum subsystems, a factor which exposes a potential shortcoming of the development procedures of OMB Circular A-109. Consequently the House conferees emphasize that the language specified in Sec. 203 is a clear intent to exclude SIRCS from the A-109 process and made the funding authorized contingent upon this condition.

The conferees agreed that the next step in the SIRCS program is for the Navy to define a "baseline" design containing the best features contained in, but not limited to, three funded contractors, and that the baseline SIRCS is to be submitted for open competition for the advanced development phase. Under this procedure the Navy has the flexibility to select or develop independent subsystems such as the radar or missile for independent contracts if such action is determined to be desirable and will provide the best possible weapons system.

The conferees agreed to provide $3.9 million for the SIRCS program, with the understanding that the Navy uses the baseline approach to continue the program.

95th Congress
1st Session } HOUSE OF REPRESENTATIVES { Report
No. 95-565

DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 1978

August 4, 1977.—Ordered to be printed

Mr. Mahon, from the committee of conference,
submitted the following

CONFERENCE REPORT

[To accompany H.R. 7933]

PAGE 43

Research, Development, Test, and Evaluation, Navy

Amendment No. 47: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the Senate amendment with an amendment as follows:

> $3,991,791,000: *Provided*, That none of the funds appropriated for the Shipboard Intermediate Range Combat System program shall be available unless expended in compliance with existing acquisition policies and procedures prescribed in Office of Management and Budget Circular A-109

The managers on the part of the Senate will move to concur in the amendment of the House to the amendment of the Senate.

The $3,991,791,000 compares with $3,895,517,000 as proposed by the House and $4,032,214,000 as proposed by the Senate.

The conference agreement on items in conference is as follows:

page 49

Other Matters Related to Title V

The Senate report emphasized that the Department of Defense should adhere to OMB Circular A-109, and future funding of new programs will be contingent on compliance. The House managers agreed with the Senate language.

BIBLIOGRAPHY

1. Office of Management and Budget Circular A-109, Subject: "Major Systems Acquisition," Executive Office of the President, 5 April 1976.

2. Commission on Government Procurement, Report of the Commission on Government Procurement, Summary, Government Printing Office, Washington, D.C., 1972.

3. Berry, Robert, Deputy Director of Defense Research and Engineering, (Policy and Planning) Interview at Department of Defense, Washington, D.C., 28 June 1977.

4. Office of Management and Budget, Office of Federal Procurement Policy Pamphlet No. 1, Subject: "Major Systems Acquisition, A discussion of the Applications of OMB Circular A-109," August 1976.

5. Department of Defense Directive 5000.1, Subject: "Major System Acquisitions," 18 January 1977.

6. Department of Defense Directive 5000.2, Subject: "Major System Acquisition Process," 18 January, 1977.

7. Department of Defense Directive 500.30, Subject: "Defense Acquisition Executive," 20 August 1976.

8. Hyman, David N., The Economics of Government Activity, Holt, Rinehart and Winston, Inc., New York, 1973.

9. Hitch, Charles J. and McKean, Roland N., The Economics of Defense in the Nuclear Age, Atheneum, 1974.

10. Laurance, Edward J., The Changing Role of Congress In Defense Policy-Making, Notes presented at Naval Postgraduate School, June 1976.

11. Havemann, Joel, "Budget Report -Ford, Congress Seek Handle on Uncontrollable Spending," National Journal, 29 November 1974.

12. Peck, M. J. and Scherer, F. M., The Weapons Acquisition Process: An Economic Analysis, Harvard University, Boston, 1962.

13. Department of Defense Directive 3200.0, Subject: "Initiation of Engineering and Operational Systems Development," 1 July 1965.

14. United States Blue Ribbon Defense Panel, Report to the President and the Secretary of Defense on the Department of Defense: Appendix E Staff Report on Major Weapon Systems Acquisition Process, July 1970.

15. Department of Defense Directive 5000.1, Subject: "Acquisition of Major Defense Systems," 13 July 1971.

16. Department of the Army Report, Subject: "Report of the Army Material Acquisition Review Committee (AMARC)," 1 April 1974.

17. Office of the Secretary of the Navy Report, Subject: "Report of the Navy and Marine Corps Acquisition Review Committee (NMARC)," 1 April 1975.

18. Air Force Systems Command Report, Subject: "Project ACE Findings and Progress Report," June 1974.

19. Berzins, Aivars T. and Cohen, Barry L., Acquisition Strategy: Concept and Definition, Masters Thesis, Naval Postgraduate School, March 1977.

20. Congressional Quarterly Almanac, Subject: "Procurement Commission," P. 310, "Public Laws," P. 1240, 1969.

21. Holifield, Representative Chet, "New Tool for Cutting Government Cost," Nation's Business, February, 1970.

22. Congressional Quarterly Almanac, Subject: "Procurement Commission," P. 180, 1971.

23. Congressional Quarterly Almanac, Subject: "Congress Accepts Four Executive Reorganization Plans," p. 462, 1970.

24. Berry, Robert Crist and Peckham, Daniel Edgar, Interactions of Navy Program Manager with Congressional Committees and Their Staffs, Masters Thesis, Naval Postgraduate School, March 1977.

25. Henning, Peter John, Navy-Congressional Interactions and the Response to Mission Budgeting, Masters Thesis, Naval Postgraduate School, March 1977.

26. Commission on Government Procurement, Report of the Commission on Government Procurement, vol. 2, Part C, Acquisition of Major Systems, Government Printing Office, Washington, D. C., 1972.

27. General Accounting Office, Report to the Congress on Comparison of the Shipboard Intermediate Range Combat System with the Acquisition Plan Recommended by the Commission on Government Procurement, 24 January 1977.

28. Mobley, A. S., CDR, USN, Project Manager for Shipboard Intermediate Range Combat System Project, Interview at Naval Sea Systems Command, Washington, D. C., 29 April 1977.

29. Johnsen, Katherine, "New Procurement Office Urged by Industry Groups," Aviation Week, 30 July 1973.

30. Johnsen, Katherine, "Procurement Dispute Seen Rising," Aviation Week, 2 April 1973.

31. Congressional Quarterly Almanac, Subject: "OMB Confirmations," P. 670, 1974.

32. Anonymous, "A Plan to Centralize Government Buying," Business Week, 9 December 1972.

33. Johnsen, Katherine, "Delay on Procurement Office Urged," Aviation Week, 16 July 1973.

34. Congressional Quarterly Almanac, Subject: "Procurement Procedures," P. 668, 1974.

35. Witt, Hugh E., "Office of Federal Procurement Policy," Signal, February 1976.

36. Office of Federal Procurement Policy, Report to the Congress, 1975, Executive Office of the President, 5 April 1976.

37. Office of Management and Budget Manual, Section 225, 19 June 1975.

38. Sowle, Donald E., "COGP Recommendations are Alive and Kicking," Contract Management, July 1977.

39. Dietrich, Fred H., Presentation to National Contract Management Association Conference, San Jose, California, 26 May 1977.

40. O'Leary, Jack, "Fettig Named OFPP Administrator," Contract Management, July 1977.

41. Office of Management and Budget Circular A-76, Subject: "Policy for Acquiring Commercial or Industrial Products and Services for Government Use," Executive Office of the President, 3 March 1966.

42. Allison, Graham T., "Conceptual Models and the Cuban Missile Crisis," The American Political Science Review, September 1969.

43. Lindblom, Charles E., "The Science of 'Muddling Through'," Public Administration Review, June 1959.

44. Wildavsky, Aaron, The Politics of the Budgetary Process, Little, Brown and Co., 1974.

45. Office of Management and Budget Circular A-113, Subject: "Preparation and Submission of Management Planning, General Information and Policy - General Requirements," Executive Office of the President, 17 November 1976.

46. Lynch, Thomas D., "A Context for Zero-Based Budgeting," The Bureaucrat, Spring 1977.

47. Office of Management and Budget Circular A-11, Subject: Preparation and Submission of Budget Estimates, 29 June 1977.

48. Office of Management and Budget Bulletin 77-9, Subject: "Zero-Base Budgeting," 19 April 1977.

49. Borklund, C. W., "Mission Budgeting and A-109: Procurement is Headed for a Shake-Up," Government Executive, September 1977.

50. General Accounting Office Report, Subject: "Mission Budgeting," 27 July 1977.

51. House of Representatives Report, HR-95-565, Subject: "Department of Defense Appropriations for Fiscal Year 1978," 4 August 1977.

52. Dietrich, Fred H., Assistant Administrator for Systems Acquisition, Office of Federal Procurement, Interview at 16th Annual National Symposium, National Contract Management Association, Los Angeles, California, 22 July 1977.

53. Borklund, C. W., "The Young OFPP: Why It Will Be Stronger Than Ever," Government Executive, August 1977.

54. Fettig, Lester, Administrator, Office of Federal Procurement, Interview at Office of Management and Budget, Washington, D. C., 30 June 1977.

55. Gansler, Jacques S., Deputy Assistant Secretary of Defense (Material Acquisition), "A New Dimension in the Acquisition Process," Defense Systems Management Review, Autumn, 1977.

56. Church, Dale W., Deputy Under Secretary of Defense (Acquisition Policy), Presentation at U.S. Naval Postgraduate School, Monterey, California, 8 November 1977.

57. Acquisition Advisory Group, "Report to the Deputy Secretary of Defense," Office of the Deputy Secretary of Defense, 30 September 1975.

58. Musgrave, A. W., LCDR, USN, Deputy for Business/Financial Managerment, Shipboard Intermediate Range Combat System Project, paper delivered at the Department of Defense Sixth Annual Procurement Research Symposium, U.S. Military Academy, West Point, New York, June 1977.

59. Berry, Robert, Deputy Director of Defense Research and Engineering (Policy and Planning), presentation to National Contract Management Association Conference, San Jose, California, 26 May 1977.

60. Church, Dale W., Deputy Under Secretary of Defense (Acquisition Policy), Interview at U.S. Naval Postgraduate School, Monterey, California, 8 November 1977.

61. Secretary of the Navy Instruction 5000.2, Subject: "System Acquisition in the Department of the Navy," 13 March 1972.

62. Office of the Chief of Naval Operations Instruction 5000.42A, Subject: "Weapons System Selection and Planning," 3 March 1976.

63. Office of the Chief of Naval Material Instruction 3910.10C, Subject: "Implementation for the Navy Advanced Concepts (NAC)," 14 January 1974.

64. Office of the Chief of Naval Operations Instruction 5420.2J, Subject: "Chief of Naval Operations Executive Board (CEB)," 10 November 1973.

65. Weiser, Robert, McDonnell-Douglas, Shipboard Intermediate Range Combat System Program Manager, presentation to National Contract Management Association Conference, San Jose, California, 26 May 1977.

66. Mobley, A. S., CDR, USN, Project Manager for Shipboard Intermediate Range Combat System Project, presentation to Naval Aviation Executive Institute Second Colloquium on Navy Tactical Missile Systems, U.S. Naval Postgraduate School, Monterey, California, 16 May 1977.

67. Borklund, C. W., "Why Navy's SIRCS May Be the 'Make or Break' of A-109," Government Executive, May 1977.

68. Anonymous, "Congress Gives Conflicting Signals on How Navy Should Manage SIRCS System Development," Federal Contract Reporter, 15 August 1977.

INITIAL DISTRIBUTION LIST

		No. Copies
1.	Defense Documentation Center Cameron Station Alexandria, Virginia 22314	2
2.	Defense Logistics Studies Information Exchange U.S. Army Logistics Management Center Fort Lee, Virginia 33801	2
3.	Library, Code 0142 Naval Postgraduate School Monterey, California 93940	2
4.	Department Chairman, Code 54 Department of Administrative Sciences Naval Postgraduate School Monterey, California 93940	1
5.	Professor Melvin B. Kline, Code 54Kx Department of Administrative Sciences Naval Postgraduate School Monterey, California 93940	6
6.	Commander Allen C. Crosby, Code 54Cw Department of Administrative Sciences Naval Postgraduate School Monterey, California 93940	1
7.	Adjunct Professor Robert R. Judson, Code 75 Executive Director Navy Center for Acquisition Research Naval Postgraduate School Monterey, California 93940	1
8.	Honorable Lester Fettig Administrator Office of Federal Procurement Policy Executive Office of the President Office of Management and Budget New Executive Office Building Washington, D. C. 20503	1

9. Mr. Fred H. Dietrich 1
Office of Federal Procurement Policy
Executive Office of the President
Office of Management and Budget
New Executive Office Building
Washington, D. C. 20503

10. Mr. William N. Hunter 1
Office of Federal Procurement Policy
Executive Office of the President
Office of Management and Budget
New Executive Office Building
Washington, D. C. 20503

11. RADM C. P. Ekas, Jr. 1
Deputy Chief of Naval Material
Chief of Naval Development
Navy Department
Washington, D. C. 20360

12. RADM G. E. Jessen 1
Assistant Commander for Material Acquisition
Naval Air Systems Command Headquarters
Navy Department
Washington, D. C. 20361

13. Shipboard Intermediate Range Combat System 1
(SIRCS) Project Office (PMS-404-40)
Naval Sea Systems Command
Washington, D. C. 20362

14. LCDR Donald L. Finch 2
9625 Podium Drive
Vienna, Virginia 22180

Thesis 24 AUG 83 172677 28710
24 AUG 83 28710
F4324 Finch
c.1
Evolution and implementation of office of management and budget circular A-109.

14 JUN 78 [illegible]
18 OCT 78 25261
19 SEP 79 26530
1 FEB 80 26653
24 AUG 83 28710
JUN 14 85 13718

Thesis 172677
F4324 Finch
c.1
Evolution and implementation of office of management and budget circular A-109.

thesF4324
Evolution and implementation of office o
3 2768 002 00154 7
DUDLEY KNOX LIBRARY